TABLE OF SEQUENCES

SEQ ID NO:1 Human PPT2 nucleotide sequence

HUM125104 accession:BC001355 coding sequence:238..1146

GGCACGAGGGTGGGTTCCAGACTTGGGATAAGTAAACAGCGGGTGGAGCGAGGCCTACGGACCCAGGCCAGGTGG
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GATGCATTAGGAAGATCCTGGACCTAGAGAACAAGTCCCCCGAACGCTGAGTTGGAGGCGGGACTTCGGGTGCGC
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GACAGCTCGTACAGCTTCCGCCACCTGCTGGAATACATCAATGAGACACACCCCGGGACTGTGGTGACAGTGCTC
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SEQ ID NO:2 Human PPT2 polypeptide sequence

protein_id:gi12655015

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WLFPTSMRSNLYRICYSPWGQEFSICNYWHDPHHDDLYLNASSFLALINGERDHPNATVWRKNFLRVGHLVLIGG
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SEQ ID NO:3 mouse PPT2 nucleic acid sequence

accession:NM_019441 coding sequence:1..909

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AGCTTCCGCCACCTGCTGGACTATATCAATGAGACACACACCGGGACTGTGGTGACAGTGCTTGATCTCTTCGAT
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SEQ ID NO:4 Mouse PPT2 polypeptide sequence

accession:gi9506985

MPGLWRQRLPSAWALLLLPFLPLLMPAAPAAHRGSYKPVIVVHGLFDSSYSFRHLLDYINETHTGTVVTVLDLFD
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SEQ ID NO:5 Rat PPT2 nucleic acid sequence

accession:NM_019367 coding sequence:74..982

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SEQ ID NO:6 Rat PPT2polypeptide sequence

accession:gi9506987
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WLFPTSMRSNLYRICYSPWGQEFSICNYWHDPHHDDLYLNASSFLALINGERDHPNATAWRKNFLRVGRLVLIGG
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SEQ ID NO:7 Human PPT2 splice variant

accession:AL110128 coding sequence: 104..1030
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SEQ ID NO:8 polypeptide encoded by human PPT2 splice variant

MKSCGSMLGLWGQRLPAAWVLLLLPFLPLLLLAAPAPHRASYKPVIVVHGLFDSSYSFRHLLEYINETHPGTVVT
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SEQ ID NO:9 Human Testican-1 nucleic acid sequence

HUM134992 accession:X73608 coding sequence:435..1754

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SEQ ID NO:10 Human Testican-1 polypeptide sequence

protein_id:gi793845

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SEQ ID NO:11 Mouse Testican-1 nucleic acid sequence

accession:NM_009262 coding sequence: 134..1462

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SEQ ID NO:12 Mouse Testican-1 polypeptide sequence

Protein sequence accession:gi6678111

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KPFDQALDPSKDPCLKVKCSPHKVCVTQDYQTALCVSRKHLLPRQKKGNVAHKHWLGPSNLVKCKPCPVAQSAMV
CGSDGHTYTSKCKLEFHACSTGKSLNSLCDGPCPCLPEPEPLKPKAEKSACTDKELRNLASRLKDWFGALHEDAN
RVIKPTSSDGAQGRFDTSILPICKDSLGWMFNKLDMNYDLLLDHSEINAIYLDKYEPCIKPLFNSCDSFKDGKLS
NNEWCYCFQKPAGLPCQNEMNRIQKLSKGKSLLGAFIPRCNEEGYYKATQCHGSTGQCWCVDKYGNELAGSRKQG
TVSCEEEQETSGDFGSGGSVVLLDDLEDERDVGPKDKEGKLRVRTRAVREDDEDEDDDKEDEVGYIW

SEQ ID NO:13 Human OXCT nucleic acid sequence

HUM140203, Accession:U62961; CDS:99..1661

GTCGAGCCTCTAGCCCGCCCGGGTTTCCTTCGCAGTCGCGCACCGACGCTCAAACGCGCGCTCCAACCCGCAGCC
TCCTCCTGCCTCACCGCCCGAAGATGGCGGCTCTCAAACTCCTCTCCTCCGGGCTTCGGCTCTGCGCCTCTGCCC
GCGGATCTGGGGCAACCTGGTACAAGGGATGTGTTTGTTCCTTTTCCACCAGTGCTCATCGCCATACCAAGTTTT
ATACAGATCCAGTAGAAGCTGTAAAAGACATCCCTGATGGTGCCACGGTTTTGGTTGGTGGTTTTGGGCTATGTG
GAATTCCAGAGAATCTTATAGATGCTTTACTGAAAACTGGAGTAAAAGGACTAACTGCAGTCAGCAACAATGCAG
GGGTTGACAATTTTGGTTTGGGGCTTTTGCTTCGGTCGAAGCAGATAAAACGCATGGTCTCTTCATATGTGGGAG
AAAATGCAGAATTTGAACGACAGTACTTATCTGGTGAATTAGAAGTGGAGCTGACACCACAGGGCACACTTGCAG
AGAGGATCCGTGCAGGCGGGGCTGGAGTTCCTGCATTTTACACCCCAACAGGGTATGGGACCCTGGTACAAGAAG
GAGGATCGCCCATCAAATACAACAAAGATGGCAGTGTTGCCATTGCCAGTAAGCCAAGAGAGGTGAGGGAGTTCA
ATGGTCAGCACTTTATTTTGGAGGAAGCAATTACAGGGGATTTTGCTTTGGTGAAAGCCTGGAAGGCGGACCGAG
CAGGAAACGTGATTTTCAGGAAAAGTGCAAGGAATTTCAACTTGCCAATGTGCAAAGCTGCAGAAACCACAGTGG
TAGAGGTTGAAGAAATTGTGGATATTGGAGCATTTGCTCCAGAAGACATCCATATTCCTCAGATTTATGTACATC
GCCTTATAAAGGGAGAAAAATATGAGAAAAGAATTGAGCGTTTATCAATCCGGAAAGAGGGAGATGGGGAAGCCA
AATCTGCTAAACCTGGAGATGACGTAAGGGAACGAATCATCAAGAGGGCCGCTCTTGAGTTTGAGGATGGCATGT
ATGCTAATTTGGGCATAGGAATCCCTCTCCTGGCCAGCAATTTTATCAGCCCAAATATAACTGTTCATCTTCAAA
GTGAAAATGGAGTTCTGGGTTTGGGTCCATATCCACGACAACATGAAGCTGATGCAGATCTCATCAATGCAGGCA
AGGAAACAGTTACTATTCTTCCAGGAGCCTCTTTTTTCTCCAGCGATGAATCATTTGCAATGATTAGAGGTGGAC
ACGTCGATCTGACAATGCTAGGAGCGATGCAGGTTTCCAAATATGGTGACCTGGCTAACTGGATGATACCTGGGA

AGATGGTGAAAGGAATGGGAGGTGCTATGGATTTAGTGTCCAGTGCGAAAACCAAAGTGGTGGTCACCATGGAGC
ATTCTGCAAAGGGAAATGCACATAAAATCATGGAGAAATGTACATTACCATTGACTGGAAAGCAATGTGTCAACC
GCATTATTACTGAAAAGGCTGTGTTTGATGTGGACAAGAAGAAAGGGTTGACTCTGATTGAGCTCTGGGAAGGCC
TGACAGTGGATGACGTACAAAAGAGTACTGGGTGTGATTTTGCAGTTTCACCAAAACTCATGCCAATGCAGCAGA
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TATTCATGTTTTTAGGTGATGATGGTCATTGAAACTCACTTCTTTTCAGGTGTAGCTACAATTGTGTAATGTACA
ATATTAGAGAAAGGACAGGCTTTTTATGAGTAACACACACCATATATAAAACAGCCTTTCTGGCTGACCACATGG
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TGATATGATTTTGAAAAGAATTGTTGATAGTTACATCTTCAAACTTATCATTCCAGTATGCATCTTTAAGATAAT
GTGATTCTAAGTAGATGACTTTATATTCTTGATTAAAGAGTGCTATACATGTTAAGAAATGCATTAAGGAATACA
ATAAATATTCTAAACTGATGAAAAAAAAAAAAAAAA

SEQ ID NO:14 Human OXCT polypeptide sequence

protein_id:gi1519052

MAALKLLSSGLRLCASARGSGATWYKGCVCSFSTSAHRHTKFYTDPVEAVKDIPDGATVLVGGFGLCGIPENLID
ALLKTGVKGLTAVSNNAGVDNFGLGLLLRSKQIKRMVSSYVGENAEFERQYLSGELEVELTPQGTLAERIRAGGA
GVPAFYTPTGYGTLVQEGGSPIKYNKDGSVAIASKPREVREFNGQHFILEEAITGDFALVKAWKADRAGNVIFRK
SARNFNLPMCKAAETTVVEVEEIVDIGAFAPEDIHIPQIYVHRLIKGEKYEKRIERLSIRKEGDGEAKSAKPGDD
VRERIIKRAALEFEDGMYANLGIGIPLLASNFISPNITVHLQSENGVLGLGPYPRQHEADADLINAGKETVTILP
GASFFSSDESFAMIRGGHVDLTMLGAMQVSKYGDLANWMIPGKMVKGMGGAMDLVSSAKTKVVVTMEHSAKGNAH
KIMEKCTLPLTGKQCVNRIITEKAVFDVDKKKGLTLIELWEGLTVDDVQKSTGCDFAVSPKLMPMQQIAN

SEQ ID NO:15 Mouse OXCT nucleic acid sequence

Accession:NM_024188; CDS:49..1611

CGCACGCACTCCCGCGCGCGCCACCGTCTCCCGCACCCGGGGCCGAAGATGGCGGCTCTCAAACTCCTGTCCTCT
GGGCTTCGGCTCGGCGCCTCAGCCCGCAGCTCGCGGGGCGCCCTGCATAAGGGGTGTGTCTGCTACTTCTCTGTC
AGTACTCGTCACCACACCAAATTTTACACAGATCCCGTGGAAGCTGTAAAAGATATTCCTAATGGTGCAACCTTG
CTGGTTGGTGGTTTTGGGCTGTGTGGTATTCCAGAGAATCTTATAGGAGCTTTACTGAAGACTGGAGTAAAAGAT
CTAACTGCAGTCAGCAACAATGCAGGGGTTGACAACTTCGGCCTGGGCCTTTTACTTCGATCCAAGCAGATAAAA
CGAATGATCTCCTCATATGTGGGAGAAAATGCAGAATTTGAGCGACAGTTCCTTTCTGGTGAATTAGAAGTAGAG
CTGACACCTCAGGGCACACTTGCCGAGAGGATCCGTGCCGGTGGAGCTGGAGTCCCTGCCTTCTACACCAGCACA
GGGTATGGGACTCTGGTACAGGAAGGAGGATCACCCATCAAATATAACAAAGATGGCAGTGTTGCCATTGCCAGC
AAGCCACGAGAGGTGAGGGAGTTTAACGGTCAGCACTTCATTTTGGAGGAAGCCATCACGGGAGATTTTGCTCTG
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TGCAAAGCTGCAGGAACTACCGTGGTGGAGGTTGAAGAAATTGTAGACATTGGCTCATTTGCCCCAGAAGATATC
CACATTCCAAAGATTTATGTGCACCGCCTCATAAAGGGAGAGAAATATGAGAAGAGAATTGAGCGTTTATCACTC
CGAAAGGAAGGAGATGGAAAAGGCAAATCCGGTAAGCCTGGAGGCGATGTGAGGGAACGGATCATCAAGCGAGCC
GCCCTGGAGTTTGAGGACGGCATGTACGCTAACTTGGGTATTGGGATTCCTCTTCTGGCCAGCAACTTCATCAGT
CCCAACATGACTGTTCATCTTCAAAGTGAAAATGGAGTCTTGGGCCTGGGCCCATACCCACTGAAAGACGAAGCT
GATGCGGATCTCATCAATGCAGGAAAGGAAACAGTTACTGTTCTCCCAGGAGCCTCTTTCTTCTCCAGCGATGAG
TCATTCGCCATGATTAGAGGGGGACATGTCAATCTAACAATGTTAGGAGCCATGCAGGTTTCTAAGTATGGTGAC
CTGGCCAACTGGATGATACCTGGAAAAATGGTGAAAGGAATGGGAGGAGCTATGGATTTGGTGTCCAGTTCCAAA
ACCAAAGTGGTGGTCACCATGGAGCACTCTGCGAAGGGAAATGCTCATAAAATCATGGAGAAATGTACACTACCA
CTGACGGGCAAACAGTGTGTCAACCGCATCATTACAGAAAAGGGTGTGTTTGACGTGGACAAGAAAAATGGTTTG
ACACTGATTGAGCTCTGGGAAGGCCTGACTGTTGATGACATCAAGAAGAGCACAGGCTGTGACTTTGCAGTTTCA
CCAAACCTCATGCCAATGCAGCAGATTTCAACTTGAAGCATCCACTGAACATTTGTCCCAGGCTGCCAAGATTGC
ATTTTCAACACATAGGATTTAAACGGAAGGATGTCAGTAATCAATAGTTACATTACACATTTAGCAAGAAGTTTC
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GTGGGAAAAAAAAAAAAAAAAA

SEQ ID NO:16 Mouse OXCT polypeptide sequence

Accession:gi18266680

MAALKLLSSGLRLGASARSSRGALHKGCVCYFSVSTRHHTKFYTDPVEAVKDIPNGATLLVGGFGLCGIPENLIG
ALLKTGVKDLTAVSNNAGVDNFGLGLLLRSKQIKRMISSYVGENAEFERQFLSGELEVELTPQGTLAERIRAGGA
GVPAFYTSTGYGTLVQEGGSPIKYNKDGSVAIASKPREVREFNGQHFILEEAITGDFALVKAWKADRAGNVIFRK
SARNFNLPMCKAAGTTVVEVEEIVDIGSFAPEDIHIPKIYVHRLIKGEKYEKRIERLSLRKEGDGKGKSGKPGGD
VRERIIKRAALEFEDGMYANLGIGIPLLASNFISPNMTVHLQSENGVLGLGPYPLKDEADADLINAGKETVTVLP
GASFFSSDESFAMIRGGHVNLTMLGAMQVSKYGDLANWMIPGKMVKGMGGAMDLVSSSKTKVVVTMEHSAKGNAH
KIMEKCTLPLTGKQCVNRIITEKGVFDVDKKNGLTLIELWEGLTVDDIKKSTGCDFAVSPNLMPMQQIST

SEQ ID NO:17 Human ceramidase nucleic acid sequence

HUM163603 accession:BC016481 CDS:36..1223

CTGGAGTCCGGGGAGTGGCGTTGGCTGCTAGAGCGATGCCGGGCCGGAGTTGCGTCGCCTTAGTCCTCCTGGCTG
CCGCCGTCAGCTGTGCCGTCGCGCAGCACGCGCCGCCGTGGACAGAGGACTGCAGAAAATCAACCTATCCTCCTT
CAGGACCAACGTACAGAGGTGCAGTTCCATGGTACACCATAAATCTTGACTTACCACCCTACAAAAGATGGCATG
AATTGATGCTTGACAAGGCACCAATGCTAAAGGTTATAGTGAATTCTCTGAAGAATATGATAAATACATTCGTGC
CAAGTGGAAAAGTTATGCAGGTGGTGGATGAAAAATTGCCTGGCCTACTTGGCAACTTTCCTGGCCCTTTTGAAG
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TATTTACCATTTGTACTTCAATAGTAGCAGAAGACAAAAAAGGTCATCTAATACATGGGAGAAACATGGATTTTG
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TGGATTTCCAAAGAAACAACAAAACTGTCTTCAAGGCTTCAAGCTTTGCTGGCTATGTGGGCATGTTAACAGGAT
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GGATTCTGGGAAAGAAAGATGCCATGTGGATAGGGTTCCTCACTAGAACAGTTCTGGAAAATAGCACAAGTTATG
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GGTATGTGGTACAAACAAATTATGACCGTTGGAAACATCCCTTCTTCCTTGATGATCGCAGAACGCCTGCAAAGA
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TCAACAAGCTGACCGTATACACAACCTTGATAGATGTTACCAAAGGTCAATTCGAAACTTACCTGCGGGACTGCC
CTGACCCTTGTATAGGTTGGTGAGCACACGTCTGGCCTACAGAATGCGGCCTCTGAGACATGAAGACACCATCTC
CATGTGACCGAACACTGCAGCTGTCTGACCTTCCAAAGACTAAGACTCGCGGCAGGTTCTCTTTGAGTCAATAGC
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CAGCGATATAATTTTATTACATATGATTAGAGGGATGAGACAGACATTCACCTGTATATTTCTTTTAATGGGCAC
AAAATGGGCCCTTGCCTCTAAATAGCACTTTTTGGGGGTTCAAGAAGTAATCAGTATGCAAAGCAATCTTTTATAC
AATAATTGAAGTGTTCCCTTTTTCATAATTACTCTACTTCCCAGTAACCCTAAGGAAGTTGCTAACTTAAAAAAC
TGCATCCCACGTTCTGTTAATTTAGTAAATAAACAAGTCAAAGACTTGTGGAAAATAGGAAGTGAACCCATATTT
TAAATTCTCATAAGTAGCATTCATGTAATAAACAGGTTTTTAGTTTGTTCTTCAGATTGATAGGGAGTTTTAAAG
AAATTTTAGTAGTTACTAAAATTATGTTACTGTATTTTTCAGAAATCCAACTGCTTATGAAAAGTACTAATAGAA
CTTGTTAACCTTTCTAACCTTCACGATTAACTGTGAAATGTACGTCATTTGTGCAAGACCGTTTGTCCACTTCAT
TTTGTATAATCACAGTTGTGTTCCTGACACTCAATAAACAGTCATTGGAAAAAAAAAAAAAAAAAAAAAAAAAA
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SEQ ID NO: 18 Human ceramidase polypeptide sequence

protein_id:gi16741292

MPGRSCVALVLLAAAVSCAVAQHAPPWTEDCRKSTYPPSGPTYRGAVPWYTINLDLPPYKRWHELMLDKAPMLKV
IVNSLKNMINTFVPSGKVMQVVDEKLPGLLGNFPGPFEEEMKGIAAVTDIPLGEIISFNIFYELFTICTSIVAED
KKGHLIHGRNMDFGVFLGWNINNDTWVITEQLKPLTVNLDFQRNNKTVFKASSFAGYVGMLTGFKPGLFSLTLNE

RFSINGGYLGILEWILGKKDAMWIGFLTRTVLENSTSYEEAKNLLTKTKILAPAYFILGGNQSGEGCVITRDRKE
SLDVYELDAKQGRWYVVQTNYDRWKHPFFLDDRRTPAKMCLNRTSQENISFETMYDVLSTKPVLNKLTVYTTLID
VTKGQFETYLRDCPDPCIGW

SEQ ID NO:19 Mouse ceramidase nucleic acid sequence

accession:NM_019734 CDS:44..1228

GCTGCTGCTAGAGTCCCTCGGAGCGGCGCTTGCAGCTGGGAAGATGCGGGGCCAAAGTCTTCTCACCTGGGTCCT
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TCCTTCTGGACCAACCTATAGAGGACCAGTTCCGTGGCACACCATAAATCTTGATTTACCACCCTACAAAAGATG
GCATGAATTATTGGCTCAAAAGGCACCAGCGTTGAGGATTTTAGTGAATTCCATAACGAGTTTAGTGAATACATT
TGTGCCAAGTGGAAAACTAATGAAGATGGTGGATCAAAAGCTGCCTGGTATGATTGGCAGCCTTCCTGACCCTTT
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TGAATTGTTTACCATGTGTACATCAATCATAACTGAAGATGAAAAAGGTCATTTACTACATGGGAGAAACATGGA
TTTTGGAATATTTCTTGGGTGGAATATAAATAATAACACTTGGGTTGTCACAGAAGAATTAAAGCCCTTAACAGT
GAATTTGGACTTCCAAAGAAACAATAAGACTGTTTTCAAGGCTACAAGTTTTGTTGGATATGTGGGCATGTTGAC
AGGATTCAAACCAGGGCTGTTCAGTCTTTCACTAAATGAACGTTTCAGTATAAATGGTGGTTATCTGGGTATCCT
AGAATGGATGTTCGGAAGGAAAGATGCTCAGTGGGTAGGGTTTATCACTCGATCAGTTCTGGAAAACACCACAAG
TTATGAAGAAGCCAAGAACACACTGACCAAGACCAAGATAATGGCGCCAGTATATTTTATCCTGGGAGGCAAGAA
GTCTGGAGAGGGTTGTGTGATCACACGGGAAAGAAAAGAGTCTTTGGATGTCTATGAACTTGATCCTAAGCATGG
CAGATGGTATGTGGTACAAACCAATTATGACAGGTGGAAAAACACCTTGTTTATTGATGACCGCAGAACACCGGC
CAAGAAGTGTCTAAATCACACCACACAGAAGAATCTCTCCTTTGCTACCATCTATGATGTCCTATCAACAAAACC
TGTCCTCAACAAGCTGACTGTATTCACAACCTTGATGGATGTTACCAAAGGTCAATTTGAAAGTCACCTTCGAGA
TTGCCCAGACCCTTGTATAGGCTGGTGAGCACACGTTGGCCAGCCTCGAGGACGTACTGAGACCCGAAGATGTGT
TGTGCAGCGAGCGTGCCTGGTCTCCTTCCATAGGCTAAGGCTCAAGGCCTCTTGTCTTTAGTCAGGACTGCCCTC
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TTTTTTAATCTACATACTTATGTTTTTCTGTACACCAGTAGTTTTCCTTTTCCTGGTTCTCTCTTAGAACCAACC
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GATACTTATTTTAATGGGCAATCAATAGACCTCTGACTCTAGAAACAGTGTTTTGGAGGATTATAAAATAACTAT
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GAAGAGTCTAGCTTCAAAAACTTGAGTTCAAGAACTTACCACAAACTCATTATTTTTAATTCTTTTATGTATAAT
CAATGTAATGTTTTTTCCTTCTAATCATATTTTTTTAGATTTTCATACAATATAGTATTAATATTTTTCAGAAAT
CAATGTATTTATGAAAACTGCAAACAGAACTTGTTCATCTTTCTAACCTTCACAGTTGACAGTGAAGCATTCTGT
ACAGTGTGGCAGACTGTATCCATTTAGTTTTGGACAGTCTGCGGTGTCGTGATGCGCAATAAACAGTCACTGTCA
G

SEQ ID NO:20 Mouse ceramidase polypeptide sequence

accession:gi9790019

MRGQSLLTWVLAAAVTCAQAQDVPPWTEDCRKSTYPPSGPTYRGPVPWHTINLDLPPYKRWHELLAQKAPALRIL
VNSITSLVNTFVPSGKLMKMVDQKLPGMIGSLPDPFGEEMRGIADVTGIPLGEIISFNIFYELFTMCTSIITEDE
KGHLLHGRNMDFGIFLGWNINNNTWVVTEELKPLTVNLDFQRNNKTVFKATSFVGYVGMLTGFKPGLFSLSLNER
FSINGGYLGILEWMFGRKDAQWVGFITRSVLENTTSYEEAKNTLTKTKIMAPVYFILGGKKSGEGCVITRERKES
LDVYELDPKHGRWYVVQTNYDRWKNTLFIDDRRTPAKKCLNHTTQKNLSFATIYDVLSTKPVLNKLTVFTTLMDV
TKGQFESHLRDCPDPCIGW

SEQ ID NO:21 Rat cermidase nucleic acid sequence

accession:NM_053407 CDS:15..1199

TTGCAGCTGGGAAGATGCTGGGCCGTAGTCTCCTCACCTGGGTCCTGGCCGCGGCTGTCACCTGCGCCCAGGCAC
AGCAAGTGCCACCGTGGACAGAAGATTGCAGAAAATCAACTTATCCTCCTTCTGGACCAACCTATAGAGGACCAG
TTCCGTGGTACACCATAAATCTTGATTTACCACCCTACAAGAGATGGCATGAATTATTGGCTCACAAGGCACCTG
TGTTGAGAACTTTAGTGAATTCCATCTCGAATTTAGTGAATGCATTTGTGCCAAGTGGAAAAATAATGCAGATGG
TGGATGAAAAGTTGCCTGGTCTGATTGGCAGCATTCCTGGCCCTTTTGGAGAGGAAATGAGGGGGATTGCAGATG
TTACTGGGATTCCTCTAGGAGAGATTATTTCATTCAACATTTTCTATGAACTGTTCACCATGTGTACATCGATCA
TAACTGAAGATGGAAAAGGTCATTTACTACATGGAAGAAACATGGATTTTGGAATATTTCTTGGGTGGAACATTA
ACAACAACACTTGGGTGGTGACAGAAGAATTAAAGCCTTTAACAGTGAATTTGGACTTCCAGAGGAACAATAAGA
CTGTGTTCAAGGCTACAAGTTTCGCTGGATACGTGGGCATGTTGACAGGATTCAAACCAGGACTGTTAAGTCTTA
CACTGAATGAACGTTTCAGTTTAAATGGTGGTTATCTGGGTATCCTAGAATGGATGTTTGGAAAGAAAAATGCCC
AATGGGTAGGGTTTATCACTAGATCAGTTCTGGAAAATAGCACAAGTTATGAAGAAGCCAAGAATATATTGACCA
AGACCAAGATAACGGCCCCAGCATATTTTATCCTGGGAGGCAACCAGTCTGGAGAAGGTTGTGTGATTACACGAG
AAAGAAAAGAGTCTTTAGACGTCTATGAACTTGATCCTAAGCATGGCAGATGGTACGTGGTACAAACCAATTATG
ACCGGTGGAAAAACACCTTGTTTCTTGATGACCGCAGAACACCTGCGAAGAAGTGTCTAAATCACACGACACAGA
AGAATCTGTCATTTGCTACCATCTATGATGTTCTATCAACAAAACCTGTCCTCAACAAGCTGACTGTATTCACAA
CCTTGATAGATGGGACCAAAGATCCATTTGAAAGCCACCTTCGAGATTGCCCAGACCCTTGTATAGGCTGGTGAG
CACACATCAGCCAGCATACAGGGCAGACATACTCAGACCTGAAGATGTGTTTTCCAGCATGCGTGGTCTCCTTCC
ATAGG

SEQ ID NO:22 Rat ceramidase polypeptide sequence

accession:gi16758140

MLGRSLLTWVLAAAVTCAQAQQVPPWTEDCRKSTYPPSGPTYRGPVPWYTINLDLPPYKRWHELLAHKAPVLRTL
VNSISNLVNAFVPSGKIMQMVDEKLPGLIGSIPGPFGEEMRGIADVTGIPLGEIISFNIFYELFTMCTSIITEDG
KGHLLHGRNMDFGIFLGWNINNNTWVVTEELKPLTVNLDFQRNNKTVFKATSFAGYVGMLTGFKPGLLSLTLNER
FSLNGGYLGILEWMFGKKNAQWVGFITRSVLENSTSYEEAKNILTKTKITAPAYFILGGNQSGEGCVITRERKES
LDVYELDPKHGRWYVVQTNYDRWKNTLFLDDRRTPAKKCLNHTTQKNLSFATIYDVLSTKPVLNKLTVFTTLIDG
TKDPFESHLRDCPDPCIGW

SEQ ID NO:23 Human MK-STYX nucleic acid sequence

HUM170193 accession:AF069762 coding sequence:340..1281

GCCACTTCCGGGAGTCGGAAAGGAAAGCTGTGGGACCATCCTGGCAACCCCGGTGTTTGGCTGGGTTCTAGCGTA
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GGGCTTTAGGCTGGAACGCCTTAGAGGAGCCATTTTTCCAGGTGGGGCCCCAGNAGAGGCTCCGACAGGAGCTGN
GCCATAGTCGCGCANCGGGGAGGTGGAGCGCGTCCCAGACCCGANCCCCCGACCTCAGCCAAACCCATTCCTTCT
GTCCTTGGAGGCCAGAGGGGACTCTGAGCATCGGAAAGGATGCCTGGTTTGCTTTTATGTGAACCGACAGAGCTT
TACAACATCCTGAATCAGGCCACAAAACTCTCCAGATTAACAGACCCCAACTATCTCTGTTTATTGGATGTCCGT
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TACCACTTTCTCCGGACCCAGAAGATCATCTGGATGCCTCAGGAACTGGATGCATTTCAGCCATACCCCATTGAA
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AAAGCCCATGTCAATGTCTCCATGGATACAGGGCCCTTTTTTGCAGGCGATGCTGACAAGCTTCTGCACATCCGG
ATAGAAGATTCCCCGGAAGCCCAGATTCTTCCCTTCTTACGCCACATGTGTCACTTCATTGAAATTCACCATCAC
CTTGGCTCTGTCATTCTGATCTTTTCCACCCAGGGTATCAGCCGCAGTTGTGCCGCCATCATAGCCTACCTCATG
CATAGTAACGAGCAGACCTTGCAGAGGTCCTGGGCCTATGTCAAGAAGTGCAAAAACAACATGTGTCCAAATCGG
GGATTGGTGAGCCAGCTGCTGGAATGGGAGAAGACTATCCTTGGAGATTCCATCACAAACATCATGGATCCGCTC
TACTGATCTTCTCCGAGGCCCACCGAAGGGTACTGAAGAGCCTCACCTGGGGGCATTTTGTGGGTGGAGGGCCAG
AGTGTGTATACCCAGGCTTGTCTGGAAGGAGAAGGCCTTTGCTGCCTGAAAGTCTCAAAAAAAAAAAA

SEQ ID NO:24 Human MK-STYX polypeptide sequence

Protein sequence protein_id:gi4995956

MPGLLLCEPTELYNILNQATKLSRLTDPNYLCLLDVRSKWEYDESHVITALRVKKKNNEYLLPESVDLECVKYCV
VYDNNSSTLEILLKDDDDDSDSDGDGKDLVPQAAIEYGRILTRLTHHPVYILKGGYERFSGTYHFLRTQKIIWMP
QELDAFQPYPIEIVPGKVFVGNFSQACDPKIQKDLKIKAHVNVSMDTGPFFAGDADKLLHIRIEDSPEAQILPFL
RHMCHFIEIHHHLGSVILIFSTQGISRSCAAIIAYLMHSNEQTLQRSWAYVKKCKNNMCPNRGLVSQLLEWEKTI
LGDSITNIMDPLY

SEQ ID NO:25 Human MP1 nucleic acid sequence

HUM175396 accession:BC005025 coding sequence:5..3118

CGCAATGTGGCGCTGCGGCGGGCGGCGGGGCCTGTGTGTGCTGAGGCGGCTGAGCGGCGGACATGCACACCACAG
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SEQ ID NO:26 Human MP1 polypeptide sequence

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SEQ ID NO:27 Mouse MP1 nucleic acid sequence

accession:XM_127191 coding sequence:281..3103

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SEQ ID NO:28 Mouse MP1 polypeptide sequence

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SEQ ID NO:29 Human BPTF nucleotide sequence

HUM176759 accession:AB032251 CDS:472..8817

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GCCACTAAGCTGTCAGCTCTGCTCTTCAAGCACAAAGAGCAGCTCAGAGCCGAGATCCTGAAGAAGAGAGCACTC
CTGGACAAGGATCTGCAAATTGAAGTGCAGGAAGAGCTGAAGAGAGACCTGAAAATTAAGAAAGAAAAAGACCTG
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SEQ ID NO:30 Human BPTF polypeptide sequence

protein_id:gi6683492

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LQSTAS

SEQ ID NO:31 Mouse BPTF nucleotide sequence

accession:BC021489

CCACGCGTCCGGTCCTGCAGAAGCCCAGCCACAGCCTGCTCAGCCTGCAGCACAACCCCAGCCCCAGCCCCAGCC
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SEQ ID NO:32 Mouse BPTF polypeptide sequence

accession:gi18204482

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SEQ ID NO:33 Human GS3955 nucleotide sequence

HUM186702 accession:BC002637 CDS:496..1527

GGCACGAGGGTTTGGCTTCTAACGCGTTGGGACTGAGTCGCCGCCGTGAGCTCCCCGAAGACTGCACAAACTACC
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SEQ ID NO:34 Human GS3955 polypeptide sequence

protein_id:gi12803605

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FRAVHLHSGEELVCKVFDISCYQESLAPCFCLSAHSNINQITEIILGETKAYVFFERSYGDMHSFVRTCKKLREE
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TSGSYSGKAADVWSLGVMLYTMLVGRYPFHDIEPSSLFSKIRRGQFNIPETLSPKAKCLIRSILRREPSERLTSQ
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SEQ ID NO:35 Mouse GS3955 nucleotide sequence

accession:XM_126841 CDS:555..1586

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SEQ ID NO:36 Mouse GS3955 polypeptide sequence

accession:gi20845061

MNIHRSTPITIARYGRSRNKTQDFEELSSIRSAEPSQSFSPNLGSPSPPETPNLSHCVSCIGKYLLLEPLEGDHV
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EAARLFYQIASAVAHCHDGGLVLRDLKLRKFIFKDEERTRVKLESLEDAYILRGDDDSLSDKHGCPAYVSPEILN
TSGSYSGKAADVWSLGVMLYTMLVGRYPFHDIEPSSLFSKIRRGQFNIPETLSPKAKCLIRSILRREPSERLTSQ
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SEQ ID NO:37 Human FRP nucleic acid sequence

HUM188423 accession:D89937 coding sequence:77..1003

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TAGATACATAGCCATACTGCTAGTTAACCCAGTGTCCCTCAGACTTGGATGGAGTTTCTGGGAGGGTACACCCAA
ATGATGCAGATACTTGTATACTTTGAGCCCCTTAGCGACCTAACCAAATTTTAAAAATACTTTTTACCAAAGGTG
CTATTTCTCTGTAAAACACTTTTTTTTTGGCAAGTTGACTTTATTCTTCAATTATTATCATTATATTATTGTTTT
TTAATATTTTATTTTCTTGACTAGGCTGACTTTATCATGACAACTCTAGCTGATTCTTTATGAAGGATTAGGGAT
ATTCATCTTCAGCAGTGCACATGAGAAATAAACTCTGAAAAAGGCAATTTCTGGGGTTTAGGAAGGACCGTATTC
TGGGAATTACTTCAGAGGAACGGACAATAATTCTAGGATTATAGCCAAGAAGGACTGGAAGACTTCAGGAGATGC
TTCAGCTTCTTCTAGATTTTGAATGCTGAATAAGCCACTGAAGTGTGATATCTATATTATCCTTTTCTTTGCAAG
AAATTGAATAGCAGCAAATTTCTCTATCCTGAATAGCAGACAGATTCATTTTTTCAATTAGCTGTTTCTCATCCA
AGGCATTAGGAAGACCTCCCTTTTTCCAAGGCACATCGAACCTGAGTTAGCAGGAAGGGATTCTCCAATAAGAGC
AGAAATGCCAGGAAATCCTCAACACTATGGAAGATTTCTTACCGGACCCTTGAACCTCAATGATCCAGATGCAAA
ATGCAGATTCCCCAAAATTTTTGTAAATACAGATGACACTTATGAAGAGCTCCATTTAATCGTTTATAAGGCCAT
GAGTGCGGCTGTGTGCTTTATGATCGACGCCTCTGTCCACCCAACGTTGGATTTTTGCCGAAGACTGGACAGCAT
CGTTGGCCCCCAGCTCACAGTGCTGCCCTCTGACATCTGTGAACAGTTTAACATCAACAAGAGGATGTCCGGGTC
TGAGAAAGAACCCCAGTTTAAGTTTATCTACTTCAACCACATGAATCTCGCCGAGAAGAGCAC

SEQ ID NO:38 Human FRP polypeptide sequence

protein_id:gi3184393

MWKRWLALALALVAVAWVRAEEELRSKSKICANVFCGAGRECAVTEKGEPTCLCIEQCKPHKRPVCGSNGKTYLN
HCELHRDACLTGSKIQVDYDGHCKEKKSVSPSASPVVCYQSNRDELRRRIIQWLEAEIIPDGWFSKGSNYSEILD
KYFKNFDNGDSRLDSSEFLKFVEQNETAINITTYPDQENNKLLRGLCVDALIELSDENADWKLSFQEFLKCLNPS
FNPPEKKCALEDETYADGAETEVDCNRCVCACGNWVCTAMTCDGKNQKGAQTQTEEEMTRYVQELQKHQETAEKT
KRVSTKEI

SEQ ID NO:39 Mouse FRP nucleic acid sequence

accession:NM_008047 coding sequence:80..1000

AAGCGACGCTCCCACCTTCGCCTCTAACTCGCTGCCGCCACCCTGCCCAGTGTCCTCCGGAGTCCCGGACCCGAG
CACGATGTGGAAACGATGGCTGGCGCTCTCGCTGGTGACCATCGCCCTGGTCCACGGCGAGGAGGAACCTAGAAG
CAAATCCAAGATCTGCGCCAATGTGTTTTGTGGAGCTGGCAGGGAATGTGCCGTCACAGAGAAGGGGGAGCCCAC
GTGCCTCTGCATTGAGCAATGCAAACCTCACAAGAGGCCTGTGTGTGGCAGTAATGGCAAGACCTACCTCAACCA
CTGTGAACTTCATAGAGATGCCTGCCTCACTGGATCCAAGATCCAGGTTGATTATGATGGGCACTGCAAAGAAAA
GAAGTCTGCGAGTCCATCTGCCAGCCCAGTTGTCTGCTATCAAGCTAACCGCGATGAGCTCCGACGGCGCCTCAT
CCAGTGGCTGGAAGCTGAGATCATTCCAGATGGCTGGTTCTCTAAAGGCAGTAACTACAGTGAGATCCTAGACAA
GTACTTTAAGAGCTTTGATAATGGCGACTCTCACCTGGACTCCAGTGAATTCCTGAAATTCGTGGAGCAGAATGA
AACAGCCATCAACATCACCACTTATGCAGATCAGGAGAACAACAAACTGCTCAGAAGCCTCTGTGTTGACGCCCT
CATTGAACTGTCTGATGAGAACGCTGACTGGAAACTCAGCTTCCAAGAGTTCCTCAAGTGCCTCAACCCATCCTT
CAACCCTCCTGAGAAGAAGTGTGCCCTGGAGGTCGAAACCTATGCAGATGGAGCTGAGACTGAGGTGGACTGCAA
TCGCTGTGTCTGTTCCTGTGGCCACTGGGTCTGCACAGCAATGACCTGTGATGGAAAGAATCAGAAGGGGGTCCA
GACCCACACAGAGGAGGAGAAGACAGGATATGTCCAGGAACTCCAGAAGCACCAGGGCACAGCAGAAAAGACCAA
GAAGGTGAACACCAAAGAGATCTAAGAAGAGGCACAGAGCACCGTGTCCGGAGCCCAGCGCCTCCTCTTCAGCGC
TGAGCCCAGTACACACAGAGTCTGCAGCAATCACCAAATCACTAGTATTTGCTTGTATGGCAGCGAATCTTATTT
TGTTTGTTTTGCAATAAAGGAAATGAGGGTGGCCAGCCTAGCGAGGGAAGGCCACAACCTTCACCTGTAGGAATG
CTTTAAGAGAAACTAAAGGACACCTTGGGACGAGAGGCAACTAAGGAAACAGCATCGGGTTGGCAGAGGAGCAGA
GGCAGGTTTGAATGAAGCCTTTCTGGGGTCACAGCAGCTGCGAGGAGAATACAGGAAAAGCATAGAGAAACATTG
AACTAGCCCTGCTGGAGGAAGTGGGGGGAGCTTTGTAGGGAGGAACCCTGCTGCTTTGACCCTTGTCACCACTGT
CAGCATGACAGACCTGCAGCAAGTCTGCTTCTCCTTTTGGTCCCAACAATCACCTGAACACACAGCCGCCCAACT
AGTTACCTGTGTCCTCAGCCTTGCATGGAGTTTCCTGGAGGAGGTGTTTAAATGATGCAGACACTTATGTACTTC
AAGCGCATGGAGACTAACCAAATTTTTAAAATACATTTTTCTTTTTTTTTTTTTTTGTTAACCAAAGGTGCTAT
TTCTCTGTAAAAGACTTTTTTCCAAGCTGACTTCATTCCTCAGTTATTACCGTTATATTATTGTTGTTTTTTAAT
ATTTCATTTTTTGACTAGATATTAAGCTTTTGTAATTATTTTTCATTAGTCCTACTATTTCGAGAAGTGAAGGTG
AAGGGGGTTTGGGCATTTTTCCAGGGTACAGGGAACTCTGTAACACAAACAGCCCATACCCTGTCACATATTAGA
CCGGTTGCAGTTCGGAGCATGCACCCCAACCCAGAGCTTCTAGAAAATCAGCTCCATGCCACGAAGGCACAAGAG
GCCCCTCAGCAGAAGCCACAGGACAAAGCATCTTCATAGACAGCTGTTGAGATCCAAACAGTTAATTTGCTTTTG
TTTCTTGTAAGAAGTTCCAAGGATGGACGCTCAGGCTATCCCAGCCTGCCAGCCTGCTGTGATCTGTGGCTAACT
GGCAGAGTCAGCCACTGTGGTCCTTAGCTGCTCCTGTTTCTAGGTGTCAGTTTACTTAGTAAACTGGTAAGAATG
AATCTTGGAATTTAATAAATGGTAGTTTGTGGTTTAGCCAACTGGTCCAGAGGGAGCTACCTTCTCCTTAGGATA

GATGAATCTACTCCATAAGAAAAACCAGCCAGGAATAGCATGGATGGGTTTTGCTTTGGTTGAAATGATCCTAGC
AGGTGACTGGGTATGAGGACTTCATGGTCACTCTGCCCAGGAAGAGAGCGTGAAGGACAACTAGCAGCTTCCTTA
GGGATGGTACACATGTGTGTGATCTCTGGAGATCAGAGGTTGCCCCACACACATGATGATAAAACTTTTCAGATT
TAGAGCGGTTAAAACTGGAGATCGAATCTGGATTGAGAATCAGCACTGGGGGCAGAAACTGTTATTGAAAGTCAA
TCCTTTCTTTGAGACACTCCGAATAAACTATGGAGATTTTCCTGCATAGGAAAGTGTGGAATGTTGAGCTATTGA
GATGGGAGTGGAATTCGTCCTAAATAGTTTTTTCCTGGTCTCATCTGAACAAGACAATTTGCTCTGCCTAGTGTT
CTGTGCCCTCCCTTTCAAAAGCTCTGAGCCCCGCTCATGCAGTCCAGATTTCATCCCCCTCTCCAAGTGCCTTGG
AGAGCTCACGACAGCAATGCCATCATCAAAAGTTTTGCTGCTGGGAAG

SEQ ID NO:40 Mouse FRP polypeptide sequence

accession:gi6679871

MWKRWLALSLVTIALVHGEEEPRSKSKICANVFCGAGRECAVTEKGEPTCLCIEQCKPHKRPVCGSNGKTYLNHC
ELHRDACLTGSKIQVDYDGHCKEKKSASPSASPVVCYQANRDELRRRLIQWLEAEIIPDGWFSKGSNYSEILDKY
FKSFDNGDSHLDSSEFLKFVEQNETAINITTYADQENNKLLRSLCVDALIELSDENADWKLSFQEFLKCLNPSFN
PPEKKCALEVETYADGAETEVDCNRCVCSCGHWVCTAMTCDGKNQKGVQTHTEEEKTGYVQELQKHQGTAEKTKK
VNTKEI

SEQ ID NO:41 Rat FRP nucleic acid sequence

accession:NM_024369 coding sequence:64..984

CTGGCCTCCAACTCACTGCTTCCATCCTGCCCAGTGTCCTCTCGAGTCCCGGACCCGAGCACGATGTGGAAACGC
TGGCTGGCGCTCGCGCTGGTGACCATCGCCCTGGTCCACGGCGAGGAGGAACAAAGAAGCAAATCCAAGATCTGC
GCCAATGTGTTTTGTGGAGCTGGCCGGGAATGCGCCGTCACGGAGAAGGGGGAGCCAACGTGCCTCTGCATTGAG
CAATGCAAACCTCACAAGAGGCCTGTGTGTGGCAGTAATGGCAAGACCTACCTCAACCATTGTGAACTTCACAGA
GACGCCTGCCTCACTGGATCCAAGATCCAGGTTGATTATGATGGGCACTGCAAAGAAAAGAAGTCTGTGAGTCCA
TCCGCCAGCCCCGTTGTCTGCTATCAGGCTAACCGTGATGAGCTGCGGCGCCGGATCATCCAGTGGCTGGAAGCC
GAGATCATTCCAGATGGCTGGTTCTCTAAAGGCAGTAACTACAGTGAGATCCTAGACAAGTACTTTAAGAGCTTT
GATAATGGTGACTCTCACCTGGACTCCAGCGAATTCCTGAAATTCGTGGAGCAGAATGAAACAGCCGTCAACATC
ACCGCTTACCCCAATCAGGAGAACAACAAACTGCTCAGAGGCCTCTGTGTTGATGCCCTCATTGAACTGTCCGAT
GAGAACGCTGACTGGAAACTCAGCTTCCAAGAGTTCCTCAAGTGCCTCAACCCATCCTTCAACCCTCCTGAGAAG
AAGTGCGCCCTGGAGGACGAAACCTATGCAGATGGAGCTGAGACCGAGGTGGACTGCAATCGCTGTGTCTGTTCC
TGTGGACACTGGGTCTGCACAGCGATGACCTGTGATGGAAAGAATCAGAAGGGGGTCCAGACCCACACAGAGGAG
GAGATGACGAGATATGCCCAGGAACTCCAGAAGCACCAGGGAACAGCAGAAAAGACCAAGAAGGTGAACACCAAA
GAGATCTAAGAAGAGGCACGTAGCACCTCATCTGGAACCCAGCACCTCCTCTTCAGCGCTAAGCCCAGTATACAG
CGTCTGTGGCAATCACCGAATCACCAGTATTTGCTTGTACGGCAGCAAATCTTATCTGTTTGTTTTGCAATAAAG
GAAGTGAGGGTGGCTGGCTAGCCAGGGCAGGCAGGCCACAACTTTCACTTCTAGGAATGCTTTAAGAGACACTAA
AGGGCACCTTGGGGCAGGAGGCGAGTATCCGGTTGGCAGAGGAGCAGAGGCAGGTCTGAATGAAACCTTTCTGGG
GTCAGCTGTGAGGATACAACAGGAAAAGCATGTGATGTTAGGGGGAACACTGAGCTGGCCCTGCTGGAGGAAATA
GGGGGAGCTTGGTGGGGAGG

SEQ ID NO:42 Rat FRP polypeptide sequence

accession:gi13242265

MWKRWLALALVTIALVHGEEEQRSKSKICANVFCGAGRECAVTEKGEPTCLCIEQCKPHKRPVCGSNGKTYLNHC
ELHRDACLTGSKIQVDYDGHCKEKKSVSPSASPVVCYQANRDELRRRIIQWLEAEIIPDGWFSKGSNYSEILDKY
FKSFDNGDSHLDSSEFLKFVEQNETAVNITAYPNQENNKLLRGLCVDALIELSDENADWKLSFQEFLKCLNPSFN
PPEKKCALEDETYADGAETEVDCNRCVCSCGHWVCTAMTCDGKNQKGVQTHTEEEMTRYAQELQKHQGTAEKTKK
VNTKEI

SEQ ID NO:43 Human ADH2 nucleic acid sequence

HUM194166 accession:X03350 coding sequence:73..1200

AGTGCACTCAAGCAGAGAAGAAATCCACAAAGACTCACCAGTCTGCTGGTGGGCAGAGAAGACA
GAAACGACATGAGCACAGCAGGAAAAGTAATCAAATGCAAAGCAGCTGTGCTATGGGAGGTAAA
GAAACCCTTTTCCATTGAGGATGTGGAGGTTGCACCTCCTAAGGCTTATGAAGTTCGCATTAAGAT
GGTGGCTGTAGGAATCTGTCGCACAGATGACCACGTGGTTAGTGGCAACCTGGTGACCCCCCTTCC
TGTGATTTTAGGCCATGAGGCAGCCGGCATCGTGGAGAGTGTTGGAGAAGGGGTGACTACAGTCA
AACCAGGTGATAAAGTCATCCCGCTCTTTACTCCTCAGTGTGGAAAATGCAGAGTTTGTAAAAACC
CGGAGAGCAACTACTGCTTGAAAAATGATCTAGGCAATCCTCGGGGGACCCTGCAGGATGGCACC
AGGAGGTTCACCTGCAGGGGGAAGCCCATTCACCACTTCCTTGGCACCAGCACCTTCTCCCAGTAC
ACGGTGGTGGATGAGAATGCAGTGGCCAAAATTGATGCAGCCTCGCCCCTGGAGAAAGTCTGCCT
CATTGGCTGTGGATTCTCGACTGGTTATGGGTCTGCAGTTAACGTTGCCAAGGTCACCCCAGGCTC
TACCTGTGCTGTGTTTGGCCTGGGAGGGGTCGGCCTATCTGCTGTTATGGGCTGTAAAGCAGCTGG
AGCAGCCAGAATCATTGCGGTGGACATCAACAAGGACAAATTTGCAAAGGCCAAAGAGTTGGGTG
CCACTGAATGCATCAACCCTCAAGACTACAAGAAACCCATCCAGGAAGTGCTAAAGGAAATGACT
GATGGAGGTGTGGATTTTTCGTTTGAAGTCATCGGTCGGCTTGACACCATGATGGCTTCCCTGTTAT
GTTGTCATGAGGCATGTGGCACAAGCGTCATCGTAGGGGTACCTCCTGCTTCCCAGAACCTCTCAA
TAAACCCTATGCTGCTACTGACTGGACGCACCTGGAAGGGGGCTGTTTATGGTGGCTTTAAGAGTA
AAGAAGGTATCCCAAAACTTGTGGCTGATTTTATGGCTAAGAAGTTTTCACTGGATGCGTTAATAA
CCCATGTTTTACCTTTTGAAAAAATAAATGAAGGATTTGACCTGCTTCACTCTGGGAAAAGTATCC
GTACCGTCCTGACGTTTTGAGGCAATAGAGATGCCTTCCCCTGTAGCAGTCTTCAGCCTCCTCTACC
CTACGAGATCTGGAGCAACAGCTAGGAAATATCATTAATTCAGCTCTTCAGAGATGTTATCAATAA
ATTACACATGGGGGCTTTCCAAAGAAATGGAAATTGATGGGAAATTATTTTTCAGGAAAATTTAAA
ATTCAAGTCAGAAGTAAATAAAGTGTTGAACATCAGCTGGGGAATTGAAGCCAACAAACCTTCCT
TCTTAACCATTCTACTGTGTCACCTTTGCCATTGAGGAAAAATATTCCTGTGACTTCTTGCATTTTT
GGTATCTTCATAATCTTTAGTCATCGAATCCCAGTGGAGGGGACCCTTTTACTTGCCCTGAACATAC
ACATGCTGGGCCATTGTGATTGAAGTCTTCTAACTCTGTCTCAGTTTTCACTGTCGACATTTTCCTTT
TTCTAATAAAAATGTACCAAATCCCTGGGGTAAAAGCTAGGGTAAGGTAAAGGATAGACTCACAT
TTACAAGTAGTGAAGGTCCAAGAGTTCTAAATACAGGAAATTTCTTAGGAACTCAAATAAAATGC
CCACATTTTACTACAGTAAATGGCAGTGTTTTTATGACTTTTATACTATTTCTTTATGGTCGATATA
CAATTGATTTTTTAAAATAATAGCAGATTTCTTGCTTCATATGACAAAGCCTCAATTACTAATTGTA

AAAACTGAACTATTCCCAGAATCATGTTCAAAAAATCTGTAATTTTGCTGATGAAAGTGCTTCATT
GACTAAACAGTATTAGTTTGTGGCTATAAATGATTATTTAGGATGATGACTGAAAATGTGTATAAG
TAATTAAAAGTAATATGGTGGCTTTAAGTGTAGAGATGGGATGGCAAATGCTGTGAATGCAGAAT
GTAAAATTGGTAACTAAGAAATGGCACAAACACCTTAAGCAATATATTTTCCTAGTAGATATATAT
ATACACATACATATATACACATATACAAATGTATATTTTTGCAAAATTGTTTTCAATCTAGAACTTT
TCTATTAACTACCATGTCTTAAAATCAAGTCTATAATCCTAGCATTAGTTTAATATTTTGAATATGT
AAAGACCTGTGTTAATGCTTTGTTAATGCTTTTCCCACTCTCATTTGTTAATGCTTTCCCACTCTCAG
GGGAAGGATTTGCATTTTGAGCTTTATCTCTAAATGTGACATGCAAAGATTATTCCTGGTAAAGGA
GGTAGCTGTCTCCAAAAATGCTATTGTTGCAATATCTACATTCTATTTCATATTATGAAAGACCTTA
GACATAAAGTAAAATAGTTTATCA

SEQ ID NO:44 Human ADH2 polypeptide sequence

Protein sequence protein_id:gi28416

MSTAGKVIKCKAAVLWEVKKPFSIEDVEVAPPKAYEVRIKMVAVGICRTDDHVVSGNLVTPLPVILGHEAAGIVE
SVGEGVTTVKPGDKVIPLFTPQCGKCRVCKNPESNYCLKNDLGNPRGTLQDGTRRFTCRGKPIHHFLGTSTFSQY
TVVDENAVAKIDAASPLEKVCLIGCGFSTGYGSAVNVAKVTPGSTCAVFGLGGVGLSAVMGCKAAGAARIIAVDI
NKDKFAKAKELGATECINPQDYKKPIQEVLKEMTDGGVDFSFEVIGRLDTMMASLLCCHEACGTSVIVGVPPASQ
NLSINPMLLLTGRTWKGAVYGGFKSKEGIPKLVADFMAKKFSLDALITHVLPFEKINEGFDLLHSGKSIRTVLTF

SEQ ID NO:45 Mouse ADH2 nucleic acid sequence

accession:NM_007409 coding sequence:1..1128

ATGAGCACTGCGGGAAAAGTGATCAAATGCAAAGCTGCGGTGCTATGGGAGCTTCACAAACCCTTCACCATCGAG
GACATAGAAGTCGCACCCCCCAAGGCCCATGAAGTTCGAATTAAGATGGTGGCCACTGGTGTCTGCCGCTCAGAC
GATCACGTGGTTAGTGGAACCCTGGTCACACCTCTTCCTGCAGTTTTAGGCCATGAGGGAGCAGGCATTGTTGAG
AGCGTTGGAGAAGGGGTGACTTGTGTGAAACCAGGTGATAAAGTCATTCCACTCTTTTCCCCTCAGTGTGGAGAA
TGCAGGATTTGCAAGCACCCGGAAAGCAACTTTTGTAGCCGAAGCGATCTGCTAATGCCTCGGGGGACTTTGCGC
GAAGGCACCAGCAGGTTCTCCTGCAAGGGAAAGCAGATCCACAACTTTATCAGCACCAGCACCTTCTCCCAGTAC
ACCGTGGTAGATGATATAGCAGTGGCCAAAATCGATGGAGCTTCACCACTGGACAAAGTCTGCCTCATCGGCTGT
GGGTTCTCAACTGGCTATGGCTCTGCCGTCAAAGTCGCCAAGGTGACCCCAGGCTCCACATGTGCCGTGTTTGGC
CTCGGAGGTGTCGGTCTGTCTGTCATCATTGGCTGTAAAGCAGCAGGAGCAGCCAGGATCATTGCTGTGGACATC
AACAAGGACAAGTTTGCCAAGGCCAAAGAGTTGGGTGCAACTGAGTGCATCAACCCTCAAGACTACAGCAAACCC
ATCCAGGAAGTTCTCCAGGAGATGACCGACGGAGGGGTGGACTTTTCGTTTGAAGTCATCGGCCGCCTTGACACC
ATGACTTCTGCCCTGCTGAGCTGCCATGCAGCATGTGGTGTAAGCGTCGTCGTAGGAGTGCCTCCCAATGCCCAG
AACCTCTCCATGAACCCCATGTTGCTGCTGCTGGGACGCACCTGGAAGGGAGCAATATTTGGCGGGTTTAAGAGT
AAAGATTCTGTCCCTAAACTTGTGGCTGACTTCATGGCTAAGAAGTTTCCGTTGGACCCGTTAATTACCCATGTT
TTACCTTTCGAGAAAATAAATGAAGCATTTGACCTGCTTCGTTCTGGAAAGAGCATCCGTACCGTCCTGACTTTC
TGA

SEQ ID NO:46 Mouse ADH2 polypeptide sequence

Protein sequence accession:gi6724311

MSTAGKVIKCKAAVLWELHKPFTIEDIEVAPPKAHEVRIKMVATGVCRSDDHVVSGTLVTPLPAVLGHEGAGIVE
SVGEGVTCVKPGDKVIPLFSPQCGECRICKHPESNFCSRSDLLMPRGTLREGTSRFSCKGKQIHNFISTSTFSQY
TVVDDIAVAKIDGASPLDKVCLIGCGFSTGYGSAVKVAKVTPGSTCAVFGLGGVGLSVIIGCKAAGAARIIAVDI
NKDKFAKAKELGATECINPQDYSKPIQEVLQEMTDGGVDFSFEVIGRLDTMTSALLSCHAACGVSVVVGVPPNAQ
NLSMNPMLLLLGRTWKGAIFGGFKSKDSVPKLVADFMAKKFPLDPLITHVLPFEKINEAFDLLRSGKSIRTVLTF

SEQ ID NO:47 Rat ADH2 nucleic acid sequence

accession:NM_019286 coding sequence:1..1131

ATGAGCACAGCTGGAAAAGTAATCAAATGCAAAGCGGCCGTGCTATGGGAGCCTCACAAGCCCTTCACCATCGAG
GACATAGAAGTCGCACCCCCCAAGGCCCATGAAGTTCGCATTAAGATGGTGGCCACCGGAGTCTGCCGCTCAGAC
GATCACGCGGTTAGTGGATCCCTGTTCACGCCTCTTCCTGCAGTTCTAGGCCACGAGGGAGCTGGCATTGTTGAG
AGCATTGGAGAAGGGGTGACTTGTGTGAAACCAGGTGATAAAGTCATCCCGCTGTTCTCTCCCCAGTGTGGAAAA
TGCAGGATCTGCAAGCACCCGGAAAGCAACCTCTGTTGCCAAACTAAGAATCTGACACAGCCTAAGGGAGCTTTG
CTGGACGGCACCAGCAGGTTCTCCTGCAGGGGAAAGCCCATTCACCACTTCATCAGCACCAGCACCTTCTCCCAG
TACACTGTGGTAGATGACATAGCGGTGGCCAAAATCGATGCGGCTGCACCGCTGGACAAAGTCTGCCTCATCGGC
TGTGGCTTCTCGACTGGCTATGGCTCTGCCGTCCAAGTCGCCAAGGTGACCCCAGGCTCCACCTGTGCCGTGTTT
GGCCTGGGAGGTGTTGGTCTGTCTGTCGTCATTGGCTGTAAAACAGCAGGAGCAGCCAAGATCATTGCCGTGGAC
ATCAACAAAGACAAGTTTGCGAAGGCCAAAGAGTTAGGTGCCACTGACTGTATCAACCCTCAAGACTACACCAAA
CCCATCCAGGAAGTTCTCCAGGAGATGACTGATGGAGGGGTGGACTTTTCATTTGAAGTCATTGGCCGTCTTGAT
ACCATGACTTCTGCCCTGTTAAGCTGCCATTCAGCATGCGGTGTAAGCGTCATTGTCGGGGTGCCTCCCAGTGCC
CAAAGCCTCTCCGTTAACCCCATGTCGCTGCTGCTGGGACGCACCTGGAAAGGAGCAATATTCGGCGGGTTTAAG
AGTAAAGATGCCGTCCCCAAACTTGTCGCTGACTTCATGGCTAAGAAGTTTCCGTTGGAGCCGCTGATTACTCAT
GTTTTACCTTTTGAAAAGATAAATGAAGCATTTGACCTGCTCCGTGCTGGAAAGAGTATCCGTACCGTCCTGACG
TTCTGA

SEQ ID NO:48 Rat ADH2 polypeptide sequence

Protein sequence accession:gi9506375

MSTAGKVIKCKAAVLWEPHKPFTIEDIEVAPPKAHEVRIKMVATGVCRSDDHAVSGSLFTPLPAVLGHEGAGIVE
SIGEGVTCVKPGDKVIPLFSPQCGKCRICKHPESNLCCQTKNLTQPKGALLDGTSRFSCRGKPIHHFISTSTFSQ
YTVVDDIAVAKIDAAAPLDKVCLIGCGFSTGYGSAVQVAKVTPGSTCAVFGLGGVGLSVVIGCKTAGAAKIIAVD
INKDKFAKAKELGATDCINPQDYTKPIQEVLQEMTDGGVDFSFEVIGRLDTMTSALLSCHSACGVSVIVGVPPSA
QSLSVNPMSLLLGRTWKGAIFGGFKSKDAVPKLVADFMAKKFPLEPLITHVLPFEKINEAFDLLRAGKSIRTVLT
F

SEQ ID NO:49 Human acylphosphatase nucleic acid sequence

HUM197730 accession:X84194 coding sequence:69..368

CTACTCGCCGAGTTCCCTGTACGTGCTGTGTCCGATGACCTGCAGCGTGGAAGACAAGAGGTTTGAGCATGGCAG
AGGGAAACACCCTGATATCAGTGGATTATGAAATTTTTGGGAAGGTGCAAGGGGTGTTTTTCCGTAAGCATACTC
AGGCTGAGGGTAAAAAGCTGGGATTGGTAGGCTGGGTCCAGAACACTGACCGGGGCACAGTGCAAGGACAATTGC
AAGGTCCAATCTCCAAGGTGCGTCATATGCAGGAATGGCTTGAAACAAGAGGAAGTCCTAAATCACACATCGACA
AAGCAAACTTCAACAATGAAAAAGTCATCTTGAAGTTGGATTACTCAGACTTCCAAATTGTAAAATAATGGCCTG
AATTTAAGTTTTCTAAGATAAACTCAGTGGTTTGGTTTTTATTATTAATAGAGATAGAACTATTGTGTGTTAATA
TTAGCATTAGTCAATAAGTTATTTTAATGTCAGATTTTTGAATGTTATATATATTACCTGTATGATGGAAGGATT
ACCACTGTACACAAATCTAATCAATAAAAACGTTAGAACCTTCTGCTTAGAGTACAN

SEQ ID NO:50 Human acylphosphatase polypeptide sequence

Protein sequence protein_id:gi1834464

MAEGNTLISVDYEIFGKVQGVFFRKHTQAEGKKLGLVGWVQNTDRGTVQGQLQGPISKVRHMQEWLETRGSPKSH
IDKANFNNEKVILKLDYSDFQIVK

SEQ ID NO:51 Mouse acylphosphatase nucleic acid sequence

accession:NM_025421 coding sequence:135..434

GCTCTAAACTTCCGGAAGTGGCGGTTAACACGGCTCGGGCGGTTGATCTGAAGGTCTTCGGGGCTGTTCAGCGGC
TCCTGGGGAAGCCCCAGAAACTCGAGCTTCCGCCGCTCGGATCATCCAAGTGTTTGAGCATGGCAGAAGGGGACA
CCTTGGTCTCAGTGGATTACGAAATTTTTGGAAAGGTTCAAGGGGTGTTTTTCCGCAAGTACACTCAGGCTGAGG
GTAAAAAGCTAGGTTTGGTGGGCTGGGTTCAGAACACCGACCGGGGCACCGTGCAAGGGCAACTGCAGGGCCCCG
TCTCCAAGGTGCGCTTCATGCAGCAGTGGCTGGAGACCAGAGGAAGTCCCAAGTCGCACATTGACAGAGCAAACT
TCAACAATGAGAAAGTCATCGCAAACTTGGATTATTCAGACTTCCAAATTGTAAAATAATGAAACGAATCTTAAT
ATTTTTTCAAAATAATCTCACTCCTTTTTTTAAATCGCTAGATTAAAAAAAAAAATAGAACTATTCTGTGCTCAGT
ATTAGAATTTGTTAGTAAGTTATTTTGGTTGCATGTTGGAAAAGTTACCACGTATTACAAGTATGATGAAATACA
AATGTGTATAATTCTAACCAATAAAAACACATTAGAACCT

SEQ ID NO:52 Mouse acylphosphatase polypeptide sequence

Protein sequence accession:gi13384810

MAEGDTLVSVDYEIFGKVQGVFFRKYTQAEGKKLGLVGWVQNTDRGTVQGQLQGPVSKVRFMQQWLETRGSPKSH
IDRANFNNEKVIANLDYSDFQIVK

SEQ ID NO:53 Human PRK1 nucleic acid sequence

HUM213181 accession:D26181 CDS:37..2865

GAATTCCCGCGCAGAGACTCCAGGTCGCAGGTCGACATGGCCAGCGACGCCGTGCAGAGTGAGCCTCGCAGCTGG
TCCCTGCTAGAGCAGCTGGGCCTGGCCGGGGCAGACCTGGCGGCCCCCGGGGTACAGCAGCAGCTGGAGCTGGAG
CGGGAGCGGCTGCGGCGGGAAATCCGCAAGGAGCTGAAGCTGAAGGAGGGTGCTGAGAACCTGCGGCGGGCCACC

ACTGACCTGGGCCGCAGCCTGGGCCCCGTAGAGCTGCTGCTGCGGGGCTCCTCGCGCCGCCTCGACCTGCTGCAC
CAGCAGCTGCAGGAGCTGCACGCCCACGTGGTGCTTCCCGACCCGGCGGCCACCCACGATGGCCCCCAGTCCCCT
GGTGCGGGTGGCCCCACCTGCTCGGCCACCAACCTGAGCCGCGTGGCGGGCCTGGAGAAGCAGTTGGCCATTGAG
CTGAAGGTGAAGCAGGGGGCGGAGAACATGATCCAGACCTACAGCAATGGCAGCACCAAGGACCGGAAGCTGCTG
CTGACAGCCCAGCAGATGTTGCAGGACAGTAAGACCAAGATTGACATCATCCGCATGCAACTCCGCCGGGCGCTG
CAGGCCGGCCAGCTGGAGAACCAGGCAGCCCCGGATGACACCCAAGGGAGTCCTGACCTGGGGGCTGTGGAGCTG
CGCATCGAAGAGCTGCGGCACCACTTCCGAGTGGAGCACGCGGTGGCCGAGGGTGCCAAGAACGTACTGCGCCTG
CTCAGCGCTGCCAAGGCCCCGGACCGCAAGGCAGTCAGCGAGGCCCAGGAGAAATTGACAGAATCCAACCAGAAG
CTGGGGCTGCTGCGGGAGGCTCTGGAGCGGAGACTTGGGGAGCTGCCCGCCGACCACCCCAAGGGGCGGCTGCTG
CGAGAAGAGCTCGCTGCGGCCTCCTCCGCTGCCTTCAGCACCCGCCTGGCCGGGCCCTTTCCCGCCACGCACTAC
AGCACCCTGTGCAAGCCCGCGCCGCTCACAGGGACCCTGGAGGTACGAGTGGTGGGCTGCAGAGACCTCCCAGAG
ACCATCCCGTGGAACCCTACCCCCTCAATGGGGGGACCTGGGACCCCAGACAGCCGCCCCCCCTTCCTGAGCCGC
CCAGCCCGGGGCCTTTACAGCCGAAGCGGAAGCCTCAGTGGCCGGAGCAGCCTCAAAGCAGAAGCCGAGAACACC
AGTGAAGTCAGCACTGTGCTTAAGCTGGATAACACAGTGGTGGGGCAGACGTCTTGGAAGCCATGTGGCCCCAAT
GCCTGGGACCAGAGCTTCACTCTGGAGCTGGAAAGGGCACGGGAACTGGAGTTGGCTGTGTTCTGGCGGGACCAG
CGGGGCCTGTGTGCCCTCAAATTCCTGAAGTTGGAGGATTTCTTGGACAATGAGAGGCATGAGGTGCAGCTGGAC
ATGGAACCCCAGGGCTGCCTGGTGGCTGAGGTCACCTTCCGCAACCCTGTCATTGAGAGGATTCCTCGGCTCCGA
CGGCAGAAGAAAATTTTCTCCAAGCAGCAAGGGAAGGCGTTCCAGCGTGCTAGGCAGATGAACATCGATGTCGCC
ACGTGGGTGCGGCTGCTCCGGAGGCTCATCCCCAATGCCACGGGCACAGGCACCTTTAGCCCTGGGGCTTCTCCA
GGATCCGAGGCCCGGACCACGGGTGACATATCGGTGGAGAAGCTGAACCTCGGCACTGACTCGGACAGCTCACCT
CAGAAGAGCTCGCGGGATCCTCCTTCCAGCCCATCGAGCCTGAGCTCCCCCATCCAGGAATCCACTGCTCCCGAG
CTGCCTTCGGAGACCCAGGAGACCCCAGGCCCCGCCCTGTGCAGCCCTCTGAGGAAGTCACCTCTGACCCTCGAA
GATTTCAAGTTCCTGGCGGTGCTGGGCCGGGGTCATTTTGGGAAGGTGCTCCTCTCCGAATTCCGGCCCAGTGGG
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AAGCGGATATTGGCGGCAGTGACCAGTGCGGGACACCCCTTCCTGGTGAACCTCTTCGGCTGTTTCCAGACACCG
GAGCACGTGTGCTTCGTGATGGAGTACTCGGCCGGTGGGGACCTGATGCTGCACATCCACAGCGACGTGTTCTCT
GAGCCCCGTGCCATCTTTTATTCCGCCTGCGTGGTGCTGGGCCTACAGTTTCTTCACGAACACAAGATCGTCTAC
AGGGACCTGAAGTTGGACAATTTGCTCCTGGACACCGAGGGCTACGTCAAGATCGCAGACTTTGGCCTCTGCAAG
GAGGGGATGGGCTATGGGGACCGGACCAGCACATTCTGTGGGACCCCGGAGTTCCTGGCCCCTGAGGTGCTGACG
GACACGTCGTACACGCGAGCTGTGGACTGGTGGGGACTGGGTGTGCTGCTCTACGAGATGCTGGTTGGCGAGTCC
CCATTCCCAGGGGATGATGAGGAGGAGGTCTTCGACAGCATCGTCAACGACGAGGTTCGCTACCCCCGCTTCCTG
TCGGCCGAAGCCATCGGCATCATGAGAAGGCTGCTTCGGAGGAACCCAGAGCGGAGGCTGGGATCTAGCGAGAGA
GATGCAGAAGATGTGAAGAAACAGCCCTTCTTCAGGACTCTGGGCTGGGAAGCCCTGTTGGCCCGGCGCCTGCCA
CCGCCCTTTGTGCCCACGCTGTCCGGCCGCACCGACGTCAGCAACTTCGACGAGGAGTTCACCGGGGAGGCCCCC
ACACTGAGCCCGCCCCGCGACGCGCGGCCCCTTACAGCCGCGGAGCAGGCAGCCTTCCTGGACTTCGACTTCGTG
GCCGGGGGCTGCTAGCCCCCTCCCCTGCCCCTGCCCCTGCCCCTGCCCGAGAGCTCTTAGTTTTTAAAAAGGCCT
TTGGGATTTGCCGGAAAAAAAAAAAAAAAAAAAAAGGAATTC

SEQ ID NO:54 Human PRK1 polypeptide sequence

protein_id:gi825505

MASDAVQSEPRSWSLLEQLGLAGADLAAPGVQQQLELERERLRREIRKELKLKEGAENLRRATTDLGRSLGPVEL
LLRGSSRRLDLLHQQLQELHAHVVLPDPAATHDGPQSPGAGGPTCSATNLSRVAGLEKQLAIELKVKQGAENMIQ
TYSNGSTKDRKLLLTAQQMLQDSKTKIDIIRMQLRRALQAGQLENQAAPDDTQGSPDLGAVELRIEELRHHFRVE
HAVAEGAKNVLRLLSAAKAPDRKAVSEAQEKLTESNQKLGLLREALERRLGELPADHPKGRLLREELAAASSAAF
STRLAGPFPATHYSTLCKPAPLTGTLEVRVVGCRDLPETIPWNPTPSMGGPGTPDSRPPFLSRPARGLYSRSGSL
SGRSSLKAEAENTSEVSTVLKLDNTVVGQTSWKPCGPNAWDQSFTLELERARELELAVFWRDQRGLCALKFLKLE
DFLDNERHEVQLDMEPQGCLVAEVTFRNPVIERIPRLRRQKKIFSKQQGKAFQRARQMNIDVATWVRLLRRLIPN
ATGTGTFSPGASPGSEARTTGDISVEKLNLGTDSDSSPQKSSRDPPSSPSSLSSPIQESTAPELPSETQETPGPA
LCSPLRKSPLTLEDFKFLAVLGRGHFGKVLLSEFRPSGELFAIKALKKGDIVARDEVESLMCEKRILAAVTSAGH
PFLVNLFGCFQTPEHVCFVMEYSAGGDLMLHIHSDVFSEPRAIFYSACVVLGLQFLHEHKIVYRDLKLDNLLLDT
EGYVKIADFGLCKEGMGYGDRTSTFCGTPEFLAPEVLTDTSYTRAVDWWGLGVLLYEMLVGESPFPGDDEEEVFD
SIVNDEVRYPRFLSAEAIGIMRRLLRRNPERRLGSSERDAEDVKKQPFFRTLGWEALLARRLPPPFVPTLSGRTD
VSNFDEEFTGEAPTLSPPRDARPLTAAEQAAFLDFDFVAGGC

SEQ ID NO:55 Mouse PRK1 nucleic acid sequence

accession:XM_134571 CDS:229..1077

ACATCTCCAGAGCTGCCTTCAGAGACCCAGGAGACTCCAGGCCCTGGCCTGTGCAGCCCCTTGAGAAAGTCGCCC
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CGCTCCAGTGGGGAGCTCTTTGCCATCAAAGCCTTGAAGAAAGGTGACATTGTAGCCCGAGATGAGGTTGAGAGC
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TTCCAGACCCCAGAGCACGTGTGCTTTGTGATGGAGTACTCGGCGGGTGGAGACCTGATGCTGCACATTCATAGC
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AAGATTGTCTACAGGGACCTGAAGTTGGACAATTTGCTCCTGGATACTGAGGGCTACGTCAAGATCGCAGACTTT
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GAAGTGCTCACAGACACATCCTACACGCGAGCAGTGGACTGGTGGGGACTGGGCGTGCTGCTCTATGAGATGTTG
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CCCCGCTTCCTGTCTGCAGAGGCCATCGGCATCATGAGAAGGCTACTGCGGAGGAACCCGGAGCGGAGGCTGGGG
TCCACTGAGCGCGATGCAGAAGATGTGAAAAAACAGCCTTTCTTCCGGTCTCTGGGCTGGGATGTCCTGCTGGCC
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GGGGAGGCCCCCACACTGAGTCCTCCCCGGGATGCACGGCCCCTCACAGCTGCGGAGCAGGCAGCCTTCCGGGAT
TTCGACTTTGTGGCCGGAGGCTACTAGCCCCAAGCCCCTGCCTTACCCAAGAGTTCTTGATTTTTTAAAAAACAA
GCCTTTGGGGTTTACTCCATACATGCATTTTCAGCCTCTGTGTGCATCTGGACTGGAGTGTGCTTGGA

SEQ ID NO:56 Mouse PRK1 polypeptide sequence

accession:gi20885599

MCEKRILAAVTRAGHPFLVNLFGCFQTPEHVCFVMEYSAGGDLMLHIHSDVFSEPRAVFYSACVVLGLQFLHEHK
IVYRDLKLDNLLLDTEGYVKIADFGLCKEGMGYGDRTSTFCGTPEFLAPEVLTDTSYTRAVDWWGLGVLLYEMLV

GESPFPGDDEEEVFDSIVNDEVRYPRFLSAEAIGIMRRLLRRNPERRLGSTERDAEDVKKQPFFRSLGWDVLLAR
RLPPPFVPTLSGRTDVSNFDEEFTGEAPTLSPPRDARPLTAAEQAAFRDFDFVAGGY

SEQ ID NO:57 Rat PRK1 nucleic acid sequence

accession:L35634 CDS:18..2858

TGGGACCCCTGGCGGACATGGCCGGCGACGCCGTGCAGAGTGAACCTCGCAGCTGGTCACTGCTGGAGCAGCTGG
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AAAAGGAATTC

SEQ ID NO:58 Rat PRK1 polypeptide sequence

accession:gi16905491

MAGDAVQSEPRSWSLLEQLGLAGADLAAPGVQQQLELERERLKREIRKELKLKEGAENLRRATTDLGRSLAPVEL
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RVEHAVAEGAKNVLRLLSAAKAPDRKAVSEAQEKLTESNQKLGLLRESLERRLGELPADHPKGRLLREELTARSS
AAFSAILPGPFPATHYSTLSKPAPLTGTLEVRVVGCKNLPETIPWSPPPSVGASGTPDSRTPFLSRPARGLYNRS
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RAGHPFLVNLFGCFQTPEHVCFVMEYSAGGDLMLHIHSDVFSEPRAVFYSACVVLGLQFLHEHKIVYRDLKLDNL
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EVFDSIVNDEVRYPRFLSAEAIGIMRRLLRRNPERRLGSTERDAEDVKKQPFFRTLDWDALLARRLPPPFVPTLS
GRTDVSNFDEEFTGEAPTLSPPRDARPLTAAEQAAFRDFDFVAGGY

SEQ ID NO:59 Human HIOMT nucleic acid sequence

HUM221672 accession:U11091 CDS:104..1225

CAGCTGTGAGCGGGTGGCTCTTCCCCACCTTGCCAGCAGGCTCTGTGCTCCTTGAAGCAAGCGCTCCAGAGGCTC
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CAACGGCTTCATGGTGTCCCAGGTTCTCTTCGCCGCCTGCGAGCTGGGCGTGTTTGACCTTCTCGCCGAGGCCCC
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CGACTACCTGACCACGGTCAGCCCGACGTCACAATGCAGCATGCTGAAGTACATGGGCAGGACCAGCTACCGGTG
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CAAAGACCCTCTTCCGGAAGCTGATCTGTACATCCTGGCCAGGGTCCTCCATGACTGGGCAGACGGAAAGTGCTC
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AGACAGGCGAGGTCCTCTGCTCACGCAGCTCTACTCTCTGAACATGCTTGTGCAGACGGAAGGGCAGGAGAGGAC
CCCCACCCACTACCACATGCTCCTCTCTTCTGCTGGCTTCAGAGACTTCCAGTTTAAGAAAACAGGAGCCATTTA

TGATGCCATTTTAGCCAGGAAATAACTGTTTCTTGTGACCTGGAACTAACGTCAAAGCACACAAGACATAATAAT
AAAGACATGTACCTCCA

SEQ ID NO:60 Human HIOMT polypeptide sequence

protein_id:gi607842

MGSSEDQAYRLLNDYANGFMVSQVLFAACELGVFDLLAEAPGPLDVAAVAAGVRASAHGTELLLDICVSLKLLKV
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GERLQFMQALQEVWSVNGRSVLTAFDLSVFPLMCDLGGTRIKLETIILSKLSQGQKTKHRVFSLIGGAGALAKEC
MSLYPGCKITVFDIPEVVWTAKQHFSFQEEEQIDFQEGDFFKDPLPEADLYILARVLHDWADGKCSHLLERIYHT
CKPGGGILVIESLLDEDRRGPLLTQLYSLNMLVQTEGQERTPTHYHMLLSSAGFRDFQFKKTGAIYDAILARK

SEQ ID NO:61 Human Taurine Transporter nucleic acid sequence

HUM222212 accession:Z18956 coding sequence:20..1879

GAATTCCGAAAGCAAGGAGATGGCCACCAAGGAGAAGCTGCAGTGTCTGAAAGATTTCCACAAGGACATGGTGAA
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AGTCTAAATGAAACCGAAACGTGACCACGCACAAAGGCAGTCACTGCTCGAGGGGTGCAGACCGCAGAATTTTCA
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SEQ ID NO:62 Human Taurine Transporter polypeptide sequence

protein_id:gi36727

MATKEKLQCLKDFHKDMVKPSPGKSPGTRPEDEAEGKPPQREKWSSKIDFVLSVAGGFVGLGNVWRFPYLCYKNG
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SYAICLGAMTSLGSYNKYKYNSYRDCMLLGCLNSGTSFVSGFAIFSILGFMAQEQGVDIADVAESGPGLAFIAYP
KAVTMMPLPTFWSILFFIMLLLLGLDSQFVEVEGQITSLVDLYPSFLRKGYRREIFIAFVCSISYLLGLTMVTEG
GMYVFQLFDYYAASGVCLLWVAFFECFVIAWIYGGDNLYDGIEDMIGYRPGPWMKYSWVITPVLCVGCFIFSLVK
YVPLTYNKTYVSPTWAIGLGWSLALSSMLCVPLVIVIRLCQTEGPFLVRVKYLLTPREPNRWAVEREGATPYNSR
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SEQ ID NO:63 Mouse Taurine Transporter nucleic acid sequence

accession:BC015245 coding sequence:235..2100

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GGCCTGGCCCTTTCCTCCATGCTGTGTATCCCCTTGGTCATTGTCATCCTCCTCTGCCGGACGGAGGGACCGCTC
CGCGTGAGAATCAAATACCTGATAACCCCCAGGGAGCCCAACCGCTGGGCTGTGGAGCGTGAAGGGGCCACACCC
TTTCACTCCCGAGTAACCCTCATGAACGGCGCACTCATGAAACCCAGTCACGTCATTGTGGAGACCATGATGTGA
GGTCCGGGCCATGTGACAGGCGCCGCTTTCCTGCTGTTTACTAACGTTAGATTCTCATAGGACCAGGTTTACAGA
GCTTTATATTTGTACTAGGATTTTTTTTTTTAATTGTCACAGAAAATGTTACTCTATGTGTGTGTGTATGTGTAT
CGTGTATGTCTGTATATGTGTGTTTTGTTTTGTTTGGGGGATATTTTGTACAAAAAGAAAACCCATAGGCCTACG
TCCTGGGGAAGAGGATGGACTTTCATATTGATTTCCATGTATTTTGTGGGAACTTGGTAAATTTTTCTTTGTATT
TTTTTTAACATATAACTATATATACTTAGAGTCTGTCATACACTTTGCCACTTGAATTGGTCTTGCCAGCAATGG
ATCTCGTTTTTCAAAAGCAATTCTTCGGTGCTTATATAGCTGGCAGAAAGTTCTGCCCAAAAACAAATGAAAAAA
GAGAAAAAAAAAAAAAAA

SEQ ID NO:64 Mouse Taurine Transporter polypeptide sequence

accession:gi15929615

MATKEKLQCLKDFHKDILKPSPGKSPGTRPEDEADGKPPQREKWSSKIDFVLSVAGGFVGLGNVWRFPYLCYKNG
GGAFLIPYFIFLFGSGLPVFFLEVIIGQYTSEGGITCWEKICPLFSGIGYASIVIVSLLNVYYIVILAWATYYLF
HSFQKDLPWAHCNHSWNTPQCMEDTLRRNESHWVSLSTANFTSPVIEFWERNVLSLSSGIDNPGSLKWDLALCLL
LVWLVCFFCIWKGVRSTGKVVYFTATFPFAMLLVLLVRGLTLPGAGEGIKFYLYPDISRLGDPQVWIDAGTQIFF
SYAICLGAMTSLGSYNKYKYNSYRDCMLLGCLNSGTSFVSGFAIFSILGFMAQEQGVDIADVAESGPGLAFIAYP
KAVTMMPLPTFWSILFFIMLLLLGLDSQFVEVEGQITSLVDLYPSFLRKGYRREIFIAILCSISYLLGLTMVTEG
GMYVFQLFDYYAASGVCLLWVAFFECFVIAWIYGGDNLYDGIEDMIGYRPGPWMKYSWAVITPALCVGCFVFSLV
KYVPLTYNKVYRYPDWAIGLGWGLALSSMLCIPLVIVILLCRTEGPLRVRIKYLITPREPNRWAVEREGATPFHS
RVTLMNGALMKPSHVIVETMM

SEQ ID NO:65 Rat Taurine Transporter nucleic acid sequence

accession:NM_017206 coding sequence:127..1992

GCCAACGCCGCGATCGCCGCCAATCCCGCCAGCCTCGGGCCGGGCCATCCGCTGTGGGCTTAGCCACCCAGATGC
AGAGCCAGTGCCACAGCCTCTTCAGAGGAGCCTCTCAAGCAAAACGAGGAGATGGCCACCAAGGAGAAGCTTCAA
TGTCTGAAAGACTTCCACAAAGACATCCTGAAGCCTTCTCCAGGGAAGAGCCCAGGCACGCGGCCTGAGGATGAG
GCTGATGGGAAGCCCCCTCAGAGGGAGAAGTGGTCCAGCAAGATCGACTTTGTGCTGTCTGTGGCCGGAGGCTTC
GTGGGTTTGGGCAATGTCTGGCGTTTCCCGTACCTCTGCTACAAAAATGGTGGAGGTGCATTCCTCATACCGTAT
TTTATTTTCCTGTTTGGGAGCGGCCTGCCTGTGTTTTTCCTGGAGGTCATCATAGGCCAGTACACCTCAGAAGGG
GGCATCACCTGCTGGGAGAAGATCTGCCCCTTGTTCTCTGGCATTGGCTACGCGTCCATCGTCATCGTGTCCCTC
CTGAATGTGTACTACATCGTCATCCTGGCCTGGGCCACATACTACCTATTCCAGTCTTTCCAGAAGGATCTTCCC
TGGGCCCACTGCAACCATAGCTGGAACACGCCACAGTGCATGGAGGACACCCTGCGTAGGAACGAGAGTCACTGG
GTCTCCCTTAGCGCCGCCAACTTCACTTCGCCTGTGATCGAGTTCTGGGAGCGCAACGTGCTCAGCCTGTCCTCC
GGAATCGACCACCCAGGCAGTCTGAAATGGGACCTCGCGCTCTGCCTCCTCTTAGTCTGGCTCGTCTGTTTTTTC
TGCATCTGGAAGGGTGTTCGGTCCACAGGCAAGGTTGTCTACTTCACTGCTACTTTCCCGTTTGCCATGCTTCTG
GTGCTGCTGGTCCGTGGACTGACCCTGCCAGGTGCTGGTGAAGGCATCAAATTCTACCTGTACCCTAACATCAGC
CGCCTTGAGGACCCACAGGTGTGGATCGACGCTGGAACTCAGATATTCTTTTCCTACGCTATCTGCCTGGGGGCC
ATGACCTCACTGGGAAGCTATAACAAGTACAAGTATAACTCGTACAGGGACTGTATGCTGCTGGGATGCCTGAAC
AGTGGTACCAGTTTTGTGTCTGGCTTCGCAATTTTTTCCATCCTGGGCTTCATGGCACAAGAGCAAGGGGTGGAC
ATTGCTGATGTGGCTGAGTCAGGTCCTGGCTTGGCCTTCATTGCCTACCCAAAAGCTGTGACCATGATGCCGCTG
CCCACCTTTTGGTCCATTCTGTTTTTTATTATGCTCCTCTTGCTTGGACTGGACAGCCAGTTTGTTGAAGTCGAA
GGACAGATCACATCCTTGGTTGATCTTTACCCGTCCTTCCTAAGGAAGGGTTATCGTCGGGAAATCTTCATTGCC
ATCGTGTGCAGCATCAGCTACCTGCTGGGGCTGACGATGGTGACGGAGGGTGGCATGTATGTGTTTCAACTCTTT
GACTACTATGCAGCTAGTGGTGTATGCCTTTTGTGGGTCGCATTCTTTGAATGTTTTGTTATTGCCTGGATATAT
GGCGGTGATAACTTATATGACGGTATTGAGGACATGATCGGCTATCGGCCTGGACCCTGGATGAAGTACAGCTGG
GCTGTCATCACTCCAGCTCTCTGTGTTGGATGTTTCATCTTCTCTCTCGTCAAGTATGTACCCCTGACCTACAAC
AAAGTCTACCGGTACCCTGATTGGGCAATCGGGCTGGGCTGGGGCCTGGCCCTTTCCTCCATGGTGTGTATCCCC
TTGGTCATTGTCATCCTCCTCTGCCGGACGGAGGGACCGCTCCGCGTGAGAATCAAATACCTGATAACCCCCAGG
GAGCCCAACCGCTGGGCTGTGGAGCGTGAAGGGGCTACGCCCTTTCACTCCAGAGCAACCCTCATGAACGGTGCA

CTCATGAAACCCAGTCACGTCATTGTGGAGACCATGATGTGAGGTCCGGGCTGTGTGACCGGCGCCGCTTTCCTG
CCGTTTACTAACCTTAGATTCTCCTAGGACCAGGTTTACAGAGCTTTATATTTGTACTAGGATTTTTTTTTTAAT
TGTCACAGAAAATGTTACTCTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTTTCGTGTGTG
TCTGTATATGTGTATTTTGTTTTATTTGGGGGATTATTTTGTACAAAAAGAAAACCCATGGGCCTATGTCCTGGG
GGGAGAGGATGGACTTTCATATTGATTTTGATGTATTTTATGGGAACTTGGTAAATTTTTCTTTGTATTTTTTTA
ACATATAACTATATATAGAGTCTGTCATACACTTTGCCACTTGAATTGGTCTTGCCAGCAACGGATCTCGTTTTT
TGTTTTTTGTTTTTTTTTCAAAAGCAATTCTTCGGTGCTTACATAGCTGGCAGAGAGTTCTGCCCAAAAACAAAT
GAAAAAAAAAAAAA

SEQ ID NO:66 Rat Taurine Transporter polypeptide sequence

accession:gi8394318

MATKEKLQCLKDFHKDILKPSPGKSPGTRPEDEADGKPPQREKWSSKIDFVLSVAGGFVGLGNVWRFPYLCYKNG
GGAFLIPYFIFLFGSGLPVFFLEVIIGQYTSEGGITCWEKICPLFSGIGYASIVIVSLLNVYYIVILAWATYYLF
QSFQKDLPWAHCNHSWNTPQCMEDTLRRNESHWVSLSAANFTSPVIEFWERNVLSLSSGIDHPGSLKWDLALCLL
LVWLVCFFCIWKGVRSTGKVVYFTATFPFAMLLVLLVRGLTLPGAGEGIKFYLYPNISRLEDPQVWIDAGTQIFF
SYAICLGAMTSLGSYNKYKYNSYRDCMLLGCLNSGTSFVSGFAIFSILGFMAQEQGVDIADVAESGPGLAFIAYP
KAVTMMPLPTFWSILFFIMLLLLGLDSQFVEVEGQITSLVDLYPSFLRKGYRREIFIAIVCSISYLLGLTMVTEG
GMYVFQLFDYYAASGVCLLWVAFFECFVIAWIYGGDNLYDGIEDMIGYRPGPWMKYSWAVITPALCVGCFIFSLV
KYVPLTYNKVYRYPDWAIGLGWGLALSSMVCIPLVIVILLCRTEGPLRVRIKYLITPREPNRWAVEREGATPFHS
RATLMNGALMKPSHVIVETMM

SEQ ID NO:67 Human (R)-3-hydroxybutyrate dehydrogenase aldehyde reductase nucleotide sequence

HUM222493 accession:NM_004051 CDS:224..1255

GGCACGAGGGCGGAGGCCGCAGGCCGCAGGAGTGCTGGTGGAGGGGCTTCCAGAAAGACCCTGCGGCAGCGCCCCCCCTCGGC
TCTCCCCGCAGGAGAGCGGGCACCTGCGCGGCGCCGGGTGAAGGCGAGAGCCTCGGCGAGCCCTCTGCAGCGGAGCCCCCTGC
CCATTTGGTTTTGGAACCACCGGGAGGAACTGGGCCATTCTAACACCCGTTGCTACCATGCTGGCCACCCGCCTCTCCAGACC
CCTGTCACGGCTCCCAGGAAAAACCCTAAGTGCCTGTGATAGAGAAAATGGAGCAAGACGCCCACTATTGCTTGGTTCTACTT
CCTTTATCCCGATTGGCCGTCGGACTTATGCCAGTGCGGCGGAGCCGGTTGGCAGCAAAGCTGTCCTGGTCACAGGCTGTGAC
TCTGGATTTGGGTTCTCATTGGCCAAGCATCTGCATTCAAAAGGCTTCCTTGTGTTTGCTGGCTGCTTGATGAAGGACAAAGG
CCATGATGGGGTCAAGGAGCTGGACAGCCTAAACAGTGACCGATTGAGAACCGTCCAGCTCAATGTCTGCAGCAGCGAAGAGG
TGGAGAAAGTGGTGGAGATTGTCCGCTCGAGCCTGAAGGACCCTGAGAAAGGCATGTGGGGCCTCGTTAACAATGCCGGCATC
TCAACGTTCGGGGAGGTGGAGTTCACCAGCCTGGAGACCTACAAGCAGGTGGCAGAAGTGAACCTTTGGGGCACAGTGCGGAT
GACGAAATCCTTTCTCCCCCTCATCCGAAGGGCCAAAGGCCGCGTCGTCAATATCAGCAGCATGCTGGGCCGCATGGCCAACC
CGGCCCGCTCCCCGTACTGCATCACCAAGTTCGGGGTAGAGGCTTTCTCGGACTGCCTGCGCTATGAGATGTACCCCCTGGGC
GTGAAGGTCAGCGTGGTGGAGCCCGGCAACTTCATCGCTGCCACCAGCCTTTACAGCCCTGAGAGCATTCAGGCCATCGCCAA
GAAGATGTGGGAGGAGCTGCCTGAGGTCGTGCGCAAGGACTACGGCAAGAAGTACTTTGATGAAAAGATCGCCAAGATGGAGA
CCTACTGCAGCAGTGGCTCCACAGACACGTCCCCTGTCATCGATGCTGTCACACACGCCCTGACCGCCACCACCCCCTACACC
CGCTACCACCCCATGGACTACTACTGGTGGCTGCGAATGCAGATCATGACCCACTTGCCTGGAGCCATCTCCGACATGATCTA
CATCCGCTGAAGAGTCTCGCTGTGGCCTCTGTCAGGGATCCCTGGTGGAAGGGGAGGGGAGGGAGGAACCCATATAGTCAACT
CTTGATTATCCACGTGTGGATTATCCACCATGCCAGGAAGACCCATAACTGGTTTTAACACTAACTAGAGGGAATGACTTCTT

TGCATAGTGAGTGACTTGGGCCTTCACAAACAGGGTGTGGAGTGGCAGGCAGAGGCCTCTAAATCTCAGGGCAAACATGGTGA
ATCTATCTCTCCGGAGATAATTTCATACAGAGATTTTAAGAAAACATCTTTATATTAAAAACAGATCTCATTTGATCCTTAAA
AAAAAAAAAAAAAAAAA

SEQ ID NO:68 Human (R)-3-hydroxybutyrate dehydrogenase aldehyde reductase polypeptide sequence

protein_id:gi17738292

MLATRLSRPLSRLPGKTLSACDRENGARRPLLLGSTSFIPIGRRTYASAAEPVGSKAVLVTGCDSGFGFSLAKHL
HSKGFLVFAGCLMKDKGHDGVKELDSLNSDRLRTVQLNVCSSEEVEKVVEIVRSSLKDPEKGMWGLVNNAGISTF
GEVEFTSLETYKQVAEVNLWGTVRMTKSFLPLIRRAKGRVVNISSMLGRMANPARSPYCITKFGVEAFSDCLRYE
MYPLGVKVSVVEPGNFIAATSLYSPESIQAIAKKMWEELPEVVRKDYGKKYFDEKIAKMETYCSSGSTDTSPVID
AVTHALTATTPYTRYHPMDYYWWLRMQIMTHLPGAISDMIYIR

SEQ ID NO:69 Mouse(R)-3-hydroxybutyrate dehydrogenase aldehyde reductase nucleotide sequence

accession:BC027063

GGACAAAGGTGATGCTGGGGTCAAGGAACTGGACAGCTTGAAGAGTGACCGACTGAGAACCATCCAGCTCAATGT
CTGCAACAGTGAAGAGGTGGAGAAGGCGGTGGAGACGATCCGCTCCGGCCTGAAAGATCCTGAGAAGGGAATGTG
GGGCCTGGTTAACAACGCAGGCATCTCAACGTTTGGGGAGGTGGAGTTCACCAGCATGGAGACATATAAGGAGGT
GGCTGAAGTGAACCTCTGGGGAACCGTGCGCACCACAAAATCCTTCCTTCCCCTTCTCCGAAGAGCCAAAGGTCG
CGTCGTTAACATCAGCAGCATGCTGGGCCGCATGGCCAACCCCGCCCGCTCGCCATACTGCATCACCAAGTTTGG
GGTCGAGGCTTTCTCGGACTGCCTGCGCTATGAGATGCACCCTCTGGGTGTCAAGGTCAGTGTGGTGGAACCTGG
CAACTTCATAGCGGCCACCAGTCTCTACAGCCCCGAGCGCATCCAGGCCATCGCCAAGAAGATGTGGGATGACCT
GCCTGAGGTCGTCCGCAAGGACTATGGCAGGAAGTACTTCGATGAAAAGATTGCCAAGATGGAAACCTACTGCAA
CAGCGGTTCCACAGATACTTCCTCTGTCATCAACGCTGTCACACACGCCTTGACCGCCGCCACCCCGTATACCCG
CTACCATCCCATGGACTACTACTGGTGGCTTCGGATGCAGATCATGACCCATTTTCCTGGAGCCATCTCTGACAA
GATCTACATACACTGAAGAGCTGAAGAGGTCCCTTCGGTCTCCGCCAGGGAACCTGGTGGGAGGGAGAAAGATGA
GGGGAGGGAGTTTACCTTTTGATTAGCTATTGAGGATTACCCACTGTCTTAGGAAGACCTATTTTAACCTTACGT
GTTCAATGTGGTGAATGGTTTGGGCCTTCACAAATTAGGGGGGGGGGGCGGAGGGCGCAGGTGGGTGGCCCTAAA
CCTCAGGGCCAATATGGTGCTTCTATCTATCTCGAGTTGATTTTATATAAAGATTTGTGGGGAAATATCTTTATA
TTAAAAGCAGGTTATTAGAATAGAATCCAAAATCATTTTCCAGCCAAAACATCCATTCGAAATCTGTATCCCATT
TGATCCTTATGTAAGTCTCATGAGTAAACAGAACAGAATTTTTTTTTTCTTGTGTGCATGAAAGAATTTGCAGAT
CGCAGAGGACATACGAGACACCTCTTTCATTGTGTCCACGGAGTCCCGCCAGTGTTACGGCAAAGGCAAATCACA
TTTGTGTCCCACAGACACTTGAACCCATCAGTCCAGTAACCCTGTGACCAACTCTGTACCTTCTCCTGAGCCAGT
CACACCAAAGGTCACTGTGTGCTATGTCTCTGTGCGTCCGTAGCTCTGTGTGACTGGTGGCCAGCAGTCAGTGAC
TCTCTGCTGGCTCCAGGTGGGGGAATCCAGAGACTTTTCAGCTGAGATCTTGGCATTCTCATTAAAGATTCGAGT
TAGGTCTGGGTGAAGATGCTGTCCGGCTAAGAGCGCAGCTTGGTTTTGCCTAGGACAGGATTGGTGCTATGCTTG
GTGCTGCAAACAGACCAGTGGTGCCAAGGCTGGGCACTGAGACACTTGCCCAGCAATGGGTCTAGATGCCTGTTG
TCTTGTGTGCTCATGTGGTGCTCCCACATGTGGGTGCGTGTGTGCATGCACTCACACACACACACACACACACAT

CACACACACACACACACATCACACACACACACACACCTGCTCCATAGACTTCAGGGTGGTCACCTCTTCTT
TGTATTGGGAACTTCTTTTTAATTAAACTGAGACACAGTTAGAGAGCCTGTGTTCTCAATCAAGGGACTTTTGCA
TTTGAAGGCTGCTTGTCCCTGAAGTTTCCTAGGGTCTCAGTATTTGGATCCAAACCAAATCCCACCACGTTCCAG
GTGGCAGCAAGTCTTGGGCCGGGTATTTAAGTGCCAGCTTTACACACATCTCAGCTTTACACTTTTGTGCATCTT
GTTGCAAAGTCTAGGACTGCCACTAGAGGGCGCGCTGCCCCCTCAACTGGAGCCTGCTCAGGCCCGGGCGTTTTC
GTTCACACAAACTTGGGGTCTTTTCAAGAGTGTTTGACCACCTACTTGGACACTGCCAGGGAACAAAGAGAAGAG
CAAAGACCCCCTTGGAAACCGATCCTACACTCCTGGCAGTGTCTAGCCTGAAACTGAAGCCCAGCGCCAGGAGAA
AGCAAAGGAACCTGGACAGCCACAGGCGGGTGCAGGCAGTGCTGAGACAAAGAGGGTCCCACAGAGAGCGAATTC
AGCCTGCCGGTTTGGGCTTTTAACCCCTCTGGATACAAACAGAGGTGCACTGTTCTAGCTCCTGTCTTCAAAGCA
AAGTAGATAGGGCCTGAGAGGGAAGGTGAGAGGGAGCCAGGGCCCCAGGGTCCACGAATTTACCTGACAGCGGGA
TGCATTTGTACTGCAGAGCCTGCCTCCTGCTGGCGTCTTTCAGTGGCATTTTACACCTTGGGAGAATTTGTATCC
GTGTTTAATAAAGAGATTGGTCATAACAAAAAAAAAAAAAA

SEQ ID NO:70 Mouse (R)-3-hydroxybutyrate dehydrogenase aldehyde reductase polypeptide sequence

accession:gi20071589

DKGDAGVKELDSLKSDRLRTIQLNVCNSEEVEKAVETIRSGLKDPEKGMWGLVNNAGISTFGEVEFTSMETYKEV
AEVNLWGTVRTTKSFLPLLRRAKGRVVNISSMLGRMANPARSPYCITKFGVEAFSDCLRYEMHPLGVKVSVVEPG
NFIAATSLYSPERIQAIAKKMWDDLPEVVRKDYGRKYFDEKIAKMETYCNSGSTDTSSVINAVTHALTAATPYTR
YHPMDYYWWLRMQIMTHFPGAISDKIYIH

SEQ ID NO:71 Rat (R)-3-hydroxybutyrate dehydrogenase aldehyde reductase nucleotide sequence

accession:NM_053995

CCCTCAATAGCCACACTATTTATTTTATTTCAATTAAAAATTTCTTCCCAAACCTTTCCTGCACCTCCCTCACCC
AAAACTATAAACTCGGTGCCATGATGCTGGCCGCCCGTCTTTCCAGACCCCTGTCACAGCTCCCAGGAAAAGCTC
TAAGTGTCTGTGATAGAGAAAATGGGACAAGACACACACTGTTGTTTTACCCAGCTTCTTTCAGCCCTGACACCC
GTCGGACCTACACCAGCCAGGCAGATGCGGCTAGTGGCAAAGCTGTCCTGGTTACAGGCTGTGACTCTGGATTTG
GGTTCTCTTTGGCCAAGCATCTACACTCAAAAGGTTTCCTTGTATTTGCCGGATGTTTGTTGAAGGAACAAGGCG
ATGCTGGGGTCAGGGAGCTGGACAGCCTGAAGAGTGACCGGCTGAGAACCATCCAGCTCAATGTCTGCAACAGTG
AGGAGGTGGAGAAAGCGGTGGAGACCGTCCGCTCCGGCCTGAAGGATCCTGAGAAGGGAATGTGGGGCCTGGTTA
ACAACGCAGGCATCTCAACGTTTGGGGAGGTGGAGTTCACTAGCATGGAGACGTATAAGGAGGTGGCCGAAGTGA
ACCTCTGGGGAACTGTGCGCACAACAAAATCCTTCCTTCCCCTTCTCCGAAGAGCCAAAGGCCGTGTTGTTAACA
TCAGCAGCATGCTGGGTCGCATGGCCAACCCAGCCCGCTCACCATACTGCATCACCAAGTTTGGGGTAGAGGCTT
TCTCGGACTGCCTACGCTATGAGATGCACCCTCTGGGTGTGAAGGTCAGTGTGGTGGAGCCTGGCAACTTCATAG
CTGCCACCAGCCTCTATAGCCCTGAGCGTATCCAGGCCATTGCCAAGAAGATGTGGGATGAGCTGCCAGAGGTCG
TCCGCAAAGACTATGGCAAGAAGTACTTCGATGAAAAGATTGCCAAGATGGAGACCTACTGCAACAGCGGTTCCA
CCGATACGTCCTCCGTCATCAACGCTGTCACCCATGCCCTGACTGCTGCCACCCCTTATACCCGCTACCATCCCA
TGGACTACTACTGGTGGCTGCGGATGCAGGTCATGACCCATTTTCCTGGAGCCATCTCTGACAAGATCTACATAC

ACTGAAGAGCTGAAGAGGTCCCTGCAGCCTCTGCCAGGGAGCCTGATGGGAGGGAGTTCATACAGTTATCTTTTG
ATTAACCATTGTGGGTTGTCCACTGTCTTAGGAAGACCTATTTTAACCTTACGTGTTCAATGTGGTGAATGGTTT
GGGCCTTCACAAATACAGGGCACTGGTGGGTGGCCCTAACCCTCAAGGCCAATATGGTGCTTCTATCTGTCTATC
TAGAGTTGATTTTATATAAAGATTTGTGGGAAATACCTTTATATTAAAGACGTTATTAGAATAGAAAAAA

SEQ ID NO:72 Rat (R)-3-hydroxybutyrate dehydrogenase aldehyde reductase polypeptide sequence

accession:gi16758902

MMLAARLSRPLSQLPGKALSVCDRENGTRHTLLFYPASFSPDTRRTYTSQADAASGKAVLVTGCDSGFGFSLAKH
LHSKGFLVFAGCLLKEQGDAGVRELDSLKSDRLRTIQLNVCNSEEVEKAVETVRSGLKDPEKGMWGLVNNAGIST
FGEVEFTSMETYKEVAEVNLWGTVRTTKSFLPLLRRAKGRVVNISSMLGRMANPARSPYCITKFGVEAFSDCLRY
EMHPLGVKVSVVEPGNFIAATSLYSPERIQAIAKKMWDELPEVVRKDYGKKYFDEKIAKMETYCNSGSTDTSSVI
NAVTHALTAATPYTRYHPMDYYWWLRMQVMTHFPGAISDKIYIH

SEQ ID NO:73 Human aldehyde reductase nucleotide sequence

HUM223359 accession: J04794 + CDS:61..1038

AGCCAGAAATGTGAAGTGCTAGCTGAAGGATGAGCAGCAGCTAGCCAGGCAAAGGGGGCAATGGCGGCTTCCTGT
GTTCTACTGCACACTGGGCAGAAGATGCCTCTGATTGGTCTGGGTACCTGGAAGAGTGAGCCTGGTCAGGTAAAA
GCAGCTGTTAAGTATGCCCTTAGCGTAGGCTACCGCCACATTGATTGTGCTGCTATCTACGGCAATGAGCCTGAG
ATTGGGGAGGCCCTGAAGGAGGACGTGGGACCAGGCAAGGCGGTGCCTCGGGAGGAGCTGTTTGTGACATCCAAG
CTGTGGAACACCAAGCACCACCCCGAGGATGTGGAGCCTGCCCTCCGGAAGACTCTGGCTGACCTCCAGCTGGAG
TATCTGGACCTGTACCTGATGCACTGGCCTTATGCCTTTGAGCGGGGAGACAACCCCTTCCCCAAGAATGCTGAT
GGGACTATATGCTACGACTCCACCCACTACAAGGAGACTTGGAAGGCTCTGGAGGCACTGGTGGCTAAGGGGCTG
GTGCAGGCGCTGGGCCTGTCCAACTTCAACAGTCGGCAGATTGATGACATACTCAGTGTGGCCTCCGTGCGTCCA
GCTGTCTTGCAGGTGGAATGCCACCCATACTTGGCTCAAAATGAGCTAATTGCCCACTGCCAAGCACGTGGCTTG
GAGGTAACTGCTTATAGCCCTTTGGGCTCCTCTGATCGTGCATGGCGTGATCCTGATGAGCCTGTCCTGCTGGAG
GAACCAGTAGTCCTGGCATTGGCTGAAAAGTATGGCCGATCTCCAGCTCAGATCTTGCTCAGGTGGCAGGTCCAG
CGGAAAGTGATCTGCATCCCCAAAAGTATCACTCCTTCTCGAATCCTTCAGAACATCAAGGTGTTTGACTTCACC
TTTAGCCCAGAAGAGATGAAGCAGCTAAATGCCCTGAACAAAAATTGGAGATATATTGTGCCTATGCTTACGGTG
GATGGGAAGAGAGTCCCAAGGGATGCAGGGCATCCTCTGTACCCCTTTAATGACCCGTACTGAGACCACAGCTTC
TTGGCCTCCCTTCCAGCTCTGCAGCTAATGAGGTCCTGCCACAACGGAAAGAGGGAGTTAATAAAGCCATTGGAG
CATCCAT

SEQ ID NO:74 Human aldehyde reductase polypeptide sequence

protein_id:gi178481

MAASCVLLHTGQKMPLIGLGTWKSEPGQVKAAVKYALSVGYRHIDCAAIYGNEPEIGEALKEDVGPGKAVPREEL
FVTSKLWNTKHHPEDVEPALRKTLADLQLEYLDLYLMHWPYAFERGDNPFPKNADGTICYDSTHYKETWKALEAL
VAKGLVQALGLSNFNSRQIDDILSVASVRPAVLQVECHPYLAQNELIAHCQARGLEVTAYSPLGSSDRAWRDPDE

PVLLEEPVVLALAEKYGRSPAQILLRWQVQRKVICIPKSITPSRILQNIKVFDFTFSPEEMKQLNALNKNWRYIV
PMLTVDGKRVPRDAGHPLYPFNDPY

SEQ ID NO:75 Mouse aldehyde reductase nucleotide sequence

accession:NM_021473

TTCGGCACGAGGGAATGTGCAAAGTCCCAGCTTTGGCTTCTACTCCCTCTTCTACTTCGCAGGACAGTGGGGGTC
TCCTCCGTCCTGCGCGTAGTTCTGGGAGCCGGGCCCTCGCTCCTCCCTGGGGTGGGGCTGCCGCTTCTCCGCCCG
GACTTAAGTCGGGCCCTGTTGCCTCAGTACTGGAGTGCAGAGCTGAATTCGGGCCACTTTGTCTTTTCCACAGCC
TGTGCTCACTGCCAAGGGGACAATGACGGCCTCCAGTGTCCTCCTGCACACTGGACAGAAGATGCCTCTGATTGG
TCTGGGGGACATGGAAGAGTGAGCCTGGTCAGGTGAAAGCAGCCATTAAACATGCCCTTAGCGCAGGCTACCGCCA
CATTGATTGTGCTTCTGTATATGGCAATGAAACTGAGATTGGGGAGGCCCTGAAGGAGAGTGTGGGGTCAGGCAA
GGCAGTCCCTCGAGAGGAGCTGTTTGTGACATCCAAGCTGTGGAATACTAAGCACCACCCTGAGGATGTAGAACC
TGCCCTCCGGAAGACACTGGCTGATCTGCAACTGGAGTATTTGGACCTCTATTTGATGCACTGGCCTTATGCCTT
TGAGCGGGGAGACAATCCCTTTCCCAAGAATGCCGATGGAACTGTCAGATATGACTCAACTCACTATAAAGAGAC
CTGGAAGGCTCTGGAGGTACTGGTGGCAAAGGGGCTGGTGAAAGCCCTGGGCTTGTCCAACTTCAACAGTCGGCA
GATTGATGATGTCCTCAGTGTGGCCTCTGTGCGCCCAGCTGTCTTGCAGGTGGAATGCCATCCATACCTGGCTCA
GAATGAGCTCATTGCCCACTGTCACGCACGGGGCTTGGAGGTGACTGCTTATAGCCCCTTGGGTTCCTCTGACCG
TGCTTGGCGCCATCCTGATGAGCCAGTCCTGCTTGAAGAACCAGTAGTCTTGGCACTAGCTGAAAAACATGGCCG
ATCTCCAGCTCAGATCTTGCTTAGATGGCAGGTTCAGCGGAAAGTGATCTGCATCCCCAAAAGCATCAATCCTTC
CCGCATCCTTCAGAACATTCAGGTATTTGATTTCACCTTTAGCCCAGAGGAGATGAAACAATTAGATGCTCTGAA
CAAAAATTGGCGGTATATTGTGCCCATGATTACGGTGGATGGGAAGAGGGTTCCCAGAGATGCTGGACACCCTCT
GTATCCCTTTAATGACCCATACTGAGACCTATAGTTTCTCAGCTTCCCTTTCAGTTCTCCTGCTAAGCATTGCCT
GCTACTCCCCAGAAAGAAGGAATCAATAAAGCCATTGAAGTGTAA

SEQ ID NO:76 Mouse aldehyde reductase polypeptide sequence

accession:gi10946870

MTASSVLLHTGQKMPLIGLGTWKSEPGQVKAAIKHALSAGYRHIDCASVYGNETEIGEALKESVGSGKAVPREEL
FVTSKLWNTKHHPEDVEPALRKTLADLQLEYLDLYLMHWPYAFERGDNPFPKNADGTVRYDSTHYKETWKALEVL
VAKGLVKALGLSNFNSRQIDDVLSVASVRPAVLQVECHPYLAQNELIAHCHARGLEVTAYSPLGSSDRAWRHPDE
PVLLEEPVVLALAEKHGRSPAQILLRWQVQRKVICIPKSINPSRILQNIQVFDFTFSPEEMKQLDALNKNWRYIV
PMITVDGKRVPRDAGHPLYPFNDPY

SEQ ID NO:77 Rat aldehyde reductase nucleotide sequence

accession:NM_031000

GAATTCTGGCCACTTTGTCTTCTCCACAGCCTGTGCTCATTGCCAAGGGGACAATGACGGCCTCCAGTGTCCTCC
TGCACACTGGACAGAAGATGCCTCTGATTGGTCTGGGGACATGGAAGAGTGAGCCTGGTCAGGTGAAAGCAGCTA
TTAAATATGCCCTTAGCGTAGGCTACCGCCACATTGACTGTGCTTCTGTATATGGCAATGAAACTGAGATTGGAG
AGGCCCTGAAGGAGAGTGTGGGAGCAGGCAAGGCAGTACCTCGAGAGGAGCTGTTTGTGACCTCCAAGCTGTGGA
ATACTAAGCACCACCCTGAGGATGTAGAACCTGCTGTCCGGAAGACGCTGGCTGATCTGCAGCTGGAGTATTTGG

ACCTCTATTTGATGCATTGGCCTTATGCCTTCGAGCGGGGAGACAATCCCTTTCCCAAGAATGCCGATGGAACTG
TCAAATATGACTCCACTCACTATAAGGAGACCTGGAAGGCTCTGGAGGCACTGGTGGCAAAGGGGCTGGTGAAAG
CCTTGGGCTTGTCCAACTTCAGCAGTCGGCAGATAGATGATGTCCTCAGTGTGGCCTCGGTGCGCCCAGCTGTCT
TGCAGGTGGAATGCCATCCATACCTGGCTCAAAATGAGCTCATTGCCCACTGTCAAGCACGAGGCTTGGAGGTGA
CAGCTTACAGCCCCTTGGGTTCATCGGATCGTGCTTGGCGCCACCCTGATGAGCCAGTCCTGCTTGAGGAACCAG
TTGTCTTGGCACTAGCTGAAAAACATGGCCGATCTCCAGCTCAGATCTTGCTCAGATGGCAGGTTCAGCGGAAAG
TAATCTGCATCCCCAAAAGCATCACTCCTTCCCGCATCCTTCAGAACATTCAGGTATTTGATTTCACCTTTAGTC
CAGAGGAGATGAAGCAATTAGATGCTCTGAACAAAAATTGGCGGTATATTGTGCCCATGATTACGGTGGATGGGA
AGAGAGTCCCCAGAGATGCTGGACACCCTCTGTATCCCTTTAATGACCCATACTGAGGCCCGTAGTTTCTCAGCT
TCCCTTTCAGTTCTCCTGCTAAGCATTGCCTGCTACTCCCAAGAAAGAAGGACTCAATAAAGCCATTGAAGTGT

SEQ ID NO:78 Rat aldehyde reductase polypeptide sequence

accession:gi13591894

MTASSVLLHTGQKMPLIGLGTWKSEPGQVKAAIKYALSVGYRHIDCASVYGNETEIGEALKESVGAGKAVPREEL
FVTSKLWNTKHHPEDVEPAVRKTLADLQLEYLDLYLMHWPYAFERGDNPFPKNADGTVKYDSTHYKETWKALEAL
VAKGLVKALGLSNFSSRQIDDVLSVASVRPAVLQVECHPYLAQNELIAHCQARGLEVTAYSPLGSSDRAWRHPDE
PVLLEEPVVLALAEKHGRSPAQILLRWQVQRKVICIPKSITPSRILQNIQVFDFTFSPEEMKQLDALNKNWRYIV
PMITVDGKRVPRDAGHPLYPFNDPY

SEQ ID NO:79 Human PDE4B nucleotide sequence

HUM225316 accession:M97515 CDS:282..1976

GGCACGAGCCTAAAGAACCCTGGGATGACTAAGGCAGAGAGAGTCTGAGAAAACTCTTTGGTGCTTCTGCCTTTA
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CCTTCAGTAGCACCGGAATCAGCGGTGGTAGCGGTGACTCTGCTATGGACAGCCTGCAGCCGCTCCAGCCTAACT
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SEQ ID NO:80 Human PDE4B polypeptide sequence

protein_id:gi292388

MKEHGGTFSSTGISGGSGDSAMDSLQPLQPNYMPVCLFAEESYQKLAMETLEELDWCLDQLETIQTYRSVSEMAS
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HYHSDVAYHNSLHAADVAQSTHVLLSTPALDAVFTDLEILAAIFAAAIHDVDHPGVSNQFLINTNSELALMYNDE

SVLENHHLAVGFKLLQEEHCDIFMNLTKKQRQTLRKMVIDMVLATDMSKHMSLLADLKTMVETKKVTSSGVLLLD
NYTDRIQVLRNMVHCADLSNPTKSLELYRQWTDRIMEEFFQQGDKERERGMEISPMCDKHTASVEKSQVGFIDYI
VHPLWETWADLVQPDAQDILDTLEDNRNWYQSMIPQSPSPPLDEQNRDCQGLMEKFQFELTLDEEDSEGPEKEGE
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SEQ ID NO:81 Mouse PDE4B nucleotide sequence

accession:AF326556 CDS:23..2188

TAGCTAGCACTCCATACGAGACATGACAGCAAAAAATTCTCCAAAAGAATTTACTGCTTCGGAATCTGAGGTTTG
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ACAGCGGCGTCGCTTCACGGTGGCTCATACATGCTTTGATGTGGAAAATGGCCCTTCTCCAGGTCGGAGCCCACT
GGACCCTCAAGCCGGCTCTTCGTCGGGACTGGTACTTCATGCCGCCTTTCCTGGGCACAGCCAGCGCAGGGAGTC
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GCAACACGGCGATGACCTGATTGTCACTCCTTTTGCCCAGGTTCTTGCCAGCTTGCGAAGTGTAAGAAACAACTT
CACCCTGCTGACGAACCTTCATGGAGCGCCGAACAAGAGGTCACCAGCGGCTAGTCAGGCTCCAGTCTCCAGAGT
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CCTTGAGGAAGAGGATTCTGAGGGACCGGAAAAGGAGGGAGAAGGCCACAGCTATTTCAGCAGCACAAAGACGCT
TTGTGTGATTGATCCAGAGAACAGGGATTCTCTGGAAGAGACTGACATAGACATTGCAACAGAAGACAAGTCTCC
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SEQ ID NO:82 Mouse PDE4B polypeptide sequence

accession:gi17225439

MTAKNSPKEFTASESEVCIKTFKEQMRLELELPKLPGNRPTSPKISPRSSPRNSPCFFRKLLVNKSIRQRRRFTV
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SVSEMASNKFKRMLNRELTHLSEMSRSGNQVSEYISNTFLDKQNDVEIPSPTQKDREKKKKQQLMTQISGVKKLM
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ALMYNDESVLENHHLAVGFKLLQEEHCDIFQNLTKKQRQTLRKMVIDMVLATDMSKHMSLLADLKTMVETKKVTS
SGVLLLDNYTDRIQVLRNMVHCADLSNPTKSLELYRQWTDRIMEEFFQQGDKERERGMEISPMCDKHTASVEKSQ
VGFIDYIVHPLWETWADLVQPDAQDILDTLEDNRNWYQSMIPQSPSPPLDERSRDCQGLMEKFQFELTLEEEDSE
GPEKEGEGHSYFSSTKTLCVIDPENRDSLEETDIDIATEDKSPIDT

SEQ ID NO:83 Rat PDE4B nucleotide sequence

accession:L27058 CDS:542..2236

GTCTTGTCATCAGGAGACCTCATTTTACCTCTAGGTTAAGGGAGAGAATCTATGAAGAGAAAGGAATAGTCTGTG
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CAGCCCCGGGATGACTAAGGCAGAAGTAGCCTGAGAAAACTCTGCTCTGCCCTGAGTTTTAGGGCACAGTTATGC
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GAGCAGGGACTGCCAAGGCCTTATGGAGAAGTTTCAGTTCGAACTGACCCTTGAAGAAGAGGATTCTGAAGGACC
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AAACAAAGGCCACCTGGCTTTGCAGTTACTTGAGTTTGGAGCCAGAATGCAAGGCCGTGAAGCAAATAGCAGTTC
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TGAACTCACTAACAACTTCATCTATAAATCTCACCCATCCTGTTGTCTGCCAACCTGTGTGCCTTTTTTGTAAAA
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SEQ ID NO:84 Rat PDE4B polypeptide sequence

accession:gi598375

MKEQGGTVSGAGSSRGGGDSAMASLQPLQPNYLSVCLFAEESYQKLAMETLEELDWCLDQLETIQTYRSVSEMAS
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TSISRFGVNTENEDHLAKELEDLNKWGLNIFNVAGYSHNRPLTCIMYAIFQERDLLKTFKISSDTFVTYMMTLED
HYHSDVAYHNSLHAADVAQSTHVLLSTPALDAVFTDLEILAAIFAAAIHDVDHPGVSNQFLINTNSELALMYNDE
SVLENHHLAVGFKLLQEEHCDIFQNLTKKQRQTLRKMVIDMVLATDMSKHMSLLADLKTMVETKKVTSSGVLLLD
NYTDRIQVLRNMVHCADLSNPTKSLELYRQWTDRIMEEFFQQGDKERERGMEISPMCDKHTASVEKSQVGFIDYI
VHPLWETWADLVQPDAQDILDTLEDNRNWYQSMIPQSPSPPLDERSRDCQGLMEKFQFELTLEEEDSEGPEKEGE
GPNYFSSTKTLCVIDPENRDSLEETDIDIATEDKSLIDT

SEQ ID NO:85 Human CYP27 nucleic acid sequence

HUM227009 accession:M62401 CDS:22..1617

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SEQ ID NO:86 Human CYP27 polypeptide sequence

protein_id:gi181292

MAALGCARLRWALRGAGRGLCPHGARAKAAIPAALPSDKATGAPGAGPGVRRRQRSLEEIPRLGQLRFFFQLFVQ
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GHHWYQLRQALNQRLLKPAEAALYTDAFNEVIDDFMTRLDQLRAESASGNQVSDMAQLFYYFALEAICYILFEKR
IGCLQRSIPEDTVTFVRSIGLMFQNSLYATFLPKWTRPVLPFWKRYLDGWNAIFSFGKKLIDEKLEDMEAQLQAA
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QHKDFAHMPLLKAVLKETLRLYPVVPTNSRIIEKEIEVDGFLFPKNTQFVFCHYVVSRDPTAFSEPESFQPHRWL
RNSQPATPRIQHPFGSVPFGYGVRACLGRRIAELEMQLLLARLIQKYKVVLAPETGELKSVARIVLVPNKKVGLQ
FLQRQC

SEQ ID NO:87 Mouse CYP27 nucleic acid sequence

accession:NM_024226 CDS:20.1333

ATTTACAGCTTTTCTGTTAGTATGCATAATTTGTAATTGCTGCTGGAGGGCAGATCGTGGCAAGAAATGGACGAT
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CCATTCAGGGCATATTTGGAATCTGAAGTTGCCATATCAGAGGAATTGGTTCAGAAATATAGTAATTCTGCTCTT
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AGTGTTAAGGATGCCATGGCCAAAATCCAAGCAAAAATCCCTGGATTGAAGCGCAAAGCAGAATGAAAAGGCCCC
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SEQ ID NO:88 Mouse CYP27 polypeptide sequence

accession:gi13195684

MWTTSFGTYTNVNLASAPLLEQVMRQEGKYPIRDHMDQWKDHRDHKGLTYGIFIAQGEQWYHLRQALKQRLLKPD
EAALYTDALNEVISDFITRLDQVRAESESGDQVPDMAHLLYHLALEAITYILFEKRIGCLKPSIPEDTAAFIRSV
AIMFQNSVYITFLPKWTRPLLPFWKRYLNGWDNIFSFGKKLIDEKVQELKAQLQETGPDGVRVSGYLHFLLTNEL
LSTQETIGTFPELLLAGVDTTSNTLTWALYHLSKSPEIQEALHKEVTGVVPFGKVPQHKDFAHMPLLKAVIKETL
RLYPVVPTNSRIITEKETEINGFLFPKNTQFVLCHYVVSRDPSVFPEPNSFQPHRWLRKKEADNPGILHPFGSVP
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SEQ ID NO:89 Rat CYP27 nucleic acid sequence

accession:Y07534 CDS:59..1660

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GCACTTGCACGAGCTCCAGGCGCTGAACAAGGCCAAGTACGGCCCAATGTGGACAACCACCTTTGGGACTCGCAC
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CTTTGCCCACATGCCCCTGCTAAAAGCTGTGATTAAGGAGACCCTGCGCCTCTACCCTGTGGTTCCCACAAACTC
CCGGATCATCACAGAAAAGGAAACTGAAATTAATGGCTTCCTCTTCCCTAAGAATACACAGTTTGTGTTATGCCA
CTACGTGGTGTCCCGAGATCCCAGTGTCTTTCCTGAGCCCGAGAGCTTCCAGCCTCACCGATGGCTGAGGAAGAG
AGAGGACGATAACTCCGGGATCCAACACCCATTTGGCTCTGTGCCCTTTGGCTATGGGGTTCGGTCCTGCCTGGG
TCGCAGGATTGCAGAACTGGAGATGCAACTCCTGCTGTCAAGGCTGATACAAAAGTATGAGGTGGTCCTGTCTCC
CGGGATGGGAGAAGTGAAGTCTGTGTCCCGCATCGTCCTGGTTCCCAGCAAGAAGGTGAGCCTACGCTTTCTGCA
GAGACAGTAGTACCAAGCTGGGCTCCTGCTCCATGGGACTTGTCCAGAAGCCCTGGCACAGAAGTTCTTGGCCAG
TCTCACGTCACATGTCACGATGCCAGATTCAACAGGGGACCTCTCTGCCCTTCCCATAGACACCAGACGTCTGGC
ACAATCTCTACTGAGCAGCACCCATTTAAGACATTAGAGCACCTCATATCACAGGACGGTGCTTGGGTACAATTT
AAAATAAAATTTAAAATTCAAAAAA

SEQ ID NO:90 Rat CYP27 polypeptide sequence

accession:gi56034

MAVLSRMRLRWALLDTRVMGHGLCPQGARAKAAIPAALRDHESTEGPGTGQDRPRLRSLAELPGPGTLRFLFQLF
LRGYVLHLHELQALNKAKYGPMWTTTFGTRTNVNLASAPLLEQVMRQEGKYPIRDSMEQWKEHRDHKGLSYGIFI
TQGQQWYHLRHSLNQRMLKPAEAALYTDALNEVISDFIARLDQVRTESASGDQVPDVAHLLYHLALEAICYILFE
KRVGCLEPSIPEDTATFIRSVGLMFKNSVYVTFLPKWSRPLLPFWKRYMNNWDNIFSFGEKMIHQKVQEIEAQLQ
AAGPDGVQVSGYLHFLLTKELLSPQETVGTFPELILAGVDTTSNTLTWALYHLSKNPEIQEALHKEVTGVVPFGK
VPQNKDFAHMPLLKAVIKETLRLYPVVPTNSRIITEKETEINGFLFPKNTQFVLCHYVVSRDPSVFPEPESFQPH
RWLRKREDDNSGIQHPFGSVPFGYGVRSCLGRRIAELEMQLLLSRLIQKYEVVLSPGMGEVKSVSRIVLVPSKKV
SLRFLQRQ

SEQ ID NO:91 Human Endothelin A receptor nucleic acid sequence

HUM228677 accession:S57498 CDS:485..1768

GAATTCGCGGCCGCCTCTTGCGGTCCCAGAGTGGAGTGGAAGGTCTGGAGCTTTGGGAGGAGACGGGGAGGACAG
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GACGATTGTGGAGAGGCGGTGGAGAGGCTTCATCCATCCCACCCGGTCGTCGCCGGGGATTGGGGTCCCAGCGAC
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ACTCCCACACCCAAGAAGAAATGCTTTCCAAAACCGCAAGGTAGACTGGTTTATCCACCCACAACATCTACGAAT
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ATTCAGAAAGTCATAGATTTCTGAAGGCGTCAACGTGCATTTTATTTATGGACTGGTAAGTAACTGTGGTTTACT
AGCAGGAATATTTCCAATTTCTACCTTTACTACATCTTTTCAACAAGTAACTTTGTAGAAATGAGCCAGAAGCCA
AGGCCCTGAGTTGGCAGTGGCCCATAAGTGTAAAATAAAAGTTTACAGAAACCTT

SEQ ID NO:92 Human Endothelin A receptor polypeptide sequence

protein_id:gi18390352

METLCLRASFWLALVGCVISDNPERYSTNLSNHVDDFTTFRGTELSFLVTTHQPTNLVLPSNGSMHNYCPQQTKI
TSAFKYINTVISCTIFIVGMVGNATLLRIIYQNKCMRNGPNALIASLALGDLIYVVIDLPINVFKLLAGRWPFDH
NDFGVFLCKLFPFLQKSSVGITVLNLCALSVDRYRAVASWSRVQGIGIPLVTAIEIVSIWILSFILAIPEAIGFV
MVPFEYRGEQHKTCMLNATSKFMEFYQDVKDWWLFGFYFCMPLVCTAIFYTLMTCEMLNRXNGSLRIALSEHLKQ
RREVAKTVFCLVVIFALCWFPLHLSRILKKTVYNEMDKNRCELLSFLLLMDYIGINLATMNSCINPIALYFVSKK
FKNCFQSCLCCCCYQSKSLMTSVPMNGTSIQWKNHDQNNHNTDRSSHKDSMN

SEQ ID NO:93 Mouse Endothelin A receptor nucleic acid sequence

accession:BC008277 CDS:397..1680

GTCTAGGAGCCTGTGGAGTCTAAGGAAGATCGCGGGAGGCGTGTTCCTCCGGAGTTTGCTTTTCCTTGGGAGCCT
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ATCGCTGGAGCTTGCAGGCTGAGCAAGATCTCCCCCTAGAGAAGCCTGGCTGTCCGGGGAAGTTTCCCCGAGCTG
AGACTGTGCTGCAGCCCTGGTCACCCGCCACCCTGCGCGCCACCCTCGTTCTCCAGCTCAGGCTCCGGCTGGCCC
GTGCGCGGACCTGGAGCTGTCTGCTTCCGAGGAGCTCTAAGGTGAAAAAAAGAAAGGCGTGAGACCAACATAAGA
AGACTTAAAATCCAGGTTAAGATGAGTATCTTTTGCCTTGCGGCATACTTTTGGCTGACCATGGTGGGAGGCGTA
ATGGCTGACAATCCGGAGAGATACAGCGCTAATCTAAGCAGCCACATGGAAGACTTCACCCCTTTTCCGGGGACG
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CAAGGAATCGGGATCCCCTTGATTACCGCCATTGAAATCGTCTCCATCTGGATTCTTTCCTTCATCTTGGCCATC
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ACACAAACAGACAAAAAGTGTTTCAAAGTTATGGCAGATTCATTATTATTAATTATTATTATCTTATAGCCAAAC
ACATTGTGAGGTTAAAGTACTCTTTTGGAAATGTCACCGAGTGTTGGTACTTTATAACTGCATGGTACCCTAGAA
ATGATCGTTTCATCTTCTTTCAATGTACTCTGAAGAAAAGAAATAGGAGAGTTCCAGAAGGGAGATCTGGAAAGG
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SEQ ID NO:94 Mouse Endothelin A receptor polypeptide sequence

accession:gi14198449

MSIFCLAAYFWLTMVGGVMADNPERYSANLSSHMEDFTPFPGTEINFLGTTHRPPNLALPSNGSMHGYCPQQTKI
TTAFKYINTVISCTIFIVGMVGNATLLRIIYQNKCMRNGPNALIASLALGDLIYVVIDLPINVFKLLAGRWPFDH
NDFGVFLCKLFPFLQKSSVGITVLNLCALSVDRYRAVASWSRVQGIGIPLITAIEIVSIWILSFILAIPEAIGFV
MVPFEYKGELHRTCMLNATSKFMEFYQDVKDWWLFGFYFCMPLVCTAIFYTLMTCEMLNRRNGSLRIALSEHLKQ
RREVAKTVFCLVVIFALCWFPLHLSRILKKTVYDEMDKNRCELLSFLLLMDYIGINLATMNSCINPIALYFVSKK
FKNCFQSCLCCCCHQSKSLMTSVPMNGTSIQWKNQEQNNHNTERSSHKDSMN

SEQ ID NO:95 rat Endothelin A receptor nucleic acid sequence

accession:NM_012550 CDS:44..1324

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CTTCACCCCTTTTCCAGGGACAGAGTTCGACTTTCTGGGCACCACCCTTCGACCCCCTAATTTGGCCCTGCCTAG
CAATGGCTCAATGCATGGCTATTGCCCACAGCAGACAAAAATCACGACGGCTTTCAAATATATCAACACTGTGAT
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CAGGACCTGCATGCTCAACGCCACGACCAAGTTCATGGAGTTTTACCAAGACGTGAAGGACTGGTGGCTCTTTGG
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GCAGAACCACAACACAGAACGGAGCAGCCACAAGGACAGCATGAACTAACCCTGTGCAGAAGCACCGAGCAGTGT
GCCTTCGAGTCCCAGGATGAAACGGTCACGCAGCAGCTGCGCTCCCAAAACCTCCCAGGTCTCTCCCCTGCTTTT
TGTCTAAGCTT

SEQ ID NO:96 Rat Endothelin A receptor polypeptide sequence

accession:gi7549758

MGVLCFLASFWLALVGGAIADNAERYSANLSSHVEDFTPFPGTEFDFLGTTLRPPNLALPSNGSMHGYCPQQTKI
TTAFKYINTVISCTIFIVGMVGNATLLRIIYQNKCMRNGPNALIASLALGDLIYVVIDLPINVFKLLAGRWPFDH
NDFGVFLCKLFPFLQKSSVGITVLNLCALSVDRYRAVASWSRVQGIGIPLITAIEIVSIWILSFILAIPEAIGFV
MVPFEYKGEQHRTCMLNATTKFMEFYQDVKDWWLFGFYFCMPLVCTAIFYTLMTCEMLNRRNGSLRIALSEHLKQ

RREVAKTVFCLVVIFALCWFPLHLSRILKKTVYDEMDKNRCELLSFLLLMDYIGINLATMNSCINPIALYFVSKK
FKNCFQSCLCCCCHQSKSLMTSVPMNGTSIQWKNQEQNHNTERSSHKDSMN

SEQ ID NO:97 Human EGF-Like nucleic acid sequence

HUM233032 accession:M60278 CDS:262..888

GCTACGCGGGCCACGCTGCTGGCTGGCCTGACCTAGGCGCGCGGGGTCGGGCGGCCGCGCGGGCGGGCTGAGTGA
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GGTGCTACTCCATGCAGGGGTCAGTGCAGCAGAGGACAGTCTGGAGAAGGTATTAGCAAAGCAAAAGGCTGAGAA
GGAACAGGGAACATTGGAGCTGACTGTTCTTGGTAACTGATTACCTGCCAATTGCTACCGAGAAGGTTGGAGGTG
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SEQ ID NO:98 Human EGF-Like polypeptide sequence

protein_id:gi183867

MKLLPSVVLKLFLAAVLSALVTGESLERLRRGLAAGTSNPDPPTVSTDQLLPLGGGRDRKVRDLQEADLDLLRVT
LSSKPQALATPNKEEHGKRKKKGKGLGKKRDPCLRKYKDFCIHGECKYVKELRAPSCICHPGYHGERCHGLSLPV
ENRLYTYDHTTILAVVAVVLSSVCLLVIVGLLMFRYHRRGGYDVENEEKVKLGMTNSH

SEQ ID NO:99 mouse EGF-Like nucleic acid sequence

accession:NM_010415 CDS:262..888

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GCCGCAGTGTTGTCCGCGTTGGTGACCGGTGAGAGTCTGGAGCGGCTTCGGAGAGGTCTGGCGGCAGCAACCAGC
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TTCCTGGTCCTCTATCCCCCCACCTCACTCCCTTTGTGTCAAGACATTTCCCTTATCCTGCTGTTCTTCGGGTGC
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AGGGAGCTTTGGAGTTGACTATTCTTGGTCATTGATACCTATCAATTACTATAGGGAAGGTTGGTGGGAGGGAAG
GTTTTGGGTAAGGAGACTACGTGTCTCACCAAGACTATAATGTATGCTGTCACAGTCCCCATGGAAGGTTCTAGT
GCCATGTCTGAACTGTTACAACTTATATTTCCAAAACCTGGTTCATATTTATACTTTGTGACCCAAATAAAGATA
ACCCTTACTCCA

SEQ ID NO:100 Mouse EGF-Like polypeptide sequence

protein_id:gi6754178

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SEQ ID NO:101 Rat EGF-Like nucleic acid sequence

accession:L05489 CDS:32..658

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SEQ ID NO:102 Rat EGF-Like polypeptide sequence

protein_id:gi204290

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SEQ ID NO:103 Human TPR-MET nucleic acid sequence

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SEQ ID NO:104 Human TPR-MET polypeptide sequence

gi|307196|gb|AAA59591.1|

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SEQ ID NO:105 Mouse TPR-MET nucleic acid sequence

gi|6678867|ref|NM_008591.1| CDS:1..4140

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gi|6678868|ref|NP_032617.1|

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SEQ ID NO:107 Rat TPR-MET nucleic acid sequence

gi|13928699|ref|NM_031517.1|

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accession:NM_007404 coding sequence:14..2551

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